

02716.0005.NPUS01.ST25.txt
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<110> JENSEN, Rasmus B.
KELEMEN, Bradley
<120> PROTEORHODOPSIN MUTANTS WITH IMPROVED OPTICAL CHARACTERISTICS
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<150> 60/429,518
<151> 2002-11-26
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35 40 45

Phe Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Ala Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Arg
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr
100 105 110

Leu Ile Leu Ala Ala Cys Thr Ser Val Ala Ala Ser Leu Phe Lys Lys
115 120 125

Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu
130 135 140

Ala Gly Leu Ala Pro Val Leu Pro Ala Phe Ile Ile Gly Met Ala Gly
145 150 155 160

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Trp Leu Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala
 165 170 175

Val Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met
 180 185 190

Met Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala
 195 200 205

Gly Tyr Leu Met Gly Gly Glu Gly Val Tyr Ala Ser Asn Leu Asn Leu
 210 215 220

Ile Tyr Asn Leu Ala Asp Leu Val Asn Lys Ile Leu Phe Gly Leu Ile
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20 25 30

Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe Phe
35 40 45

Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr Val
50 55 60

Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met Arg
65 70 75 80

Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr Ile
85 90 95

Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu Ile
100 105 110

Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu Leu
115 120 125

Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala Gly
130 135 140

Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp Val
145 150 155 160

Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys Asn
165 170 175

Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr Ile
180 185 190

Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly Tyr
195 200 205

Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr Asn
210 215 220

Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp Asn
225 230 235 240

Val Ala Val Lys Glu Ser Ser Asn Ala
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20 25 30

Val Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Thr Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg
Page 4

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr
 100 105 110

Leu Ile Leu Ala Ala Ala Thr Asn Val Ala Ala Gly Leu Phe Lys Lys
 115 120 125

Leu Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu
 130 135 140

Ala Gly Ile Met Asn Ala Trp Gly Ala Phe Val Ile Gly Cys Leu Ala
 145 150 155 160

Trp Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ala Ala
 165 170 175

Cys Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met
 180 185 190

Tyr Ile Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr
 195 200 205

Gly Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile
 210 215 220

Tyr Asp Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile
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Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala Lys
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Thr Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly
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Val Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe
 35 40 45

Phe Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu
 Page 5

02716.0005.NPUS01.ST25.txt
50 55 60

Thr Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr
100 105 110

Leu Ile Leu Ala Ala Ala Thr Asn Val Ala Ala Gly Leu Phe Lys Lys
115 120 125

Leu Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu
130 135 140

Ala Gly Ile Met Asn Ala Trp Gly Ala Phe Val Ile Gly Cys Leu Ala
145 150 155 160

Trp Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ala Ala
165 170 175

Cys Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met
180 185 190

Tyr Ile Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr
195 200 205

Gly Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile
210 215 220

Tyr Asp Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile
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Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala Lys
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Page 6

Val Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe
 35 40 45

Phe Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu
 50 55 60

Thr Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr
 65 70 75 80

Met Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg
 85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr
 100 105 110

Leu Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys
 115 120 125

Leu Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu
 130 135 140

Ala Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala
 145 150 155 160

Trp Val Tyr Met Ile Tyr Glu Leu Tyr Ala Gly Glu Gly Lys Ser Ala
 165 170 175

Cys Asn Thr Ala Ser Pro Ser Val Gln Ser Ala Tyr Asn Thr Met Met
 180 185 190

Ala Ile Ile Val Phe Gly Trp Ala Ile Tyr Pro Ile Gly Tyr Phe Thr
 195 200 205

Gly Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile
 210 215 220

Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile
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Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala Lys
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<213> Marine eubacteria

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Val Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Thr Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr
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02716.0005.NPUS01.ST25.txt

Leu Ile Leu Ala Ala Ala Thr Asn Val Ala Ala Gly Leu Phe Lys Lys
 115 120 125

Leu Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu
 130 135 140

Ala Gly Ile Met Asn Ala Trp Gly Ala Phe Val Ile Gly Cys Leu Ala
 145 150 155 160

Trp Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ala Ala
 165 170 175

Cys Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met
 180 185 190

Tyr Ile Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr
 195 200 205

Gly Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile
 210 215 220

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| gctctattag catctactgt atttttcttt gttgaaagag atagagttc tgcaaaaatgg | 180 | |
| aaaacatcat taactgtatc gggcttggtt actggatttg ctttctggca ttacatgtac | 240 | |
| atgagagggg tatggattga gaccgggtat tcgccaactg tatttagata cattgattgg | 300 | |
| ttactaacag ttcccttatt gatatgtcaa ttctacttaa ttcttgctgc tgcaacaat | 360 | |
| gttgctgctg gcctgtttaa gaaattattg gttggttctc ttgttatgct tgtgtttgg | 420 | |
| tacatgggtg aggcaggaat tatgaacgct tggggtgcat tcgttattgg gtgttagct | 480 | |
| tgggtataca tgatttatga actatggct ggagaaggca aggctgcatg taatactgca | 540 | |
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35 40 45

Phe Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Thr Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Arg
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr
100 105 110

Leu Ile Leu Ala Ala Cys Thr Ser Val Ala Ala Ser Leu Phe Lys Lys
115 120 125

Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu
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Ala Gly Leu Ala Pro Val Leu Pro Ala Phe Ile Ile Gly Met Ala Gly
145 150 155 160

Trp Leu Tyr Met Ile Tyr Glu Leu His Met Gly Glu Gly Lys Ala Ala
165 170 175

Val Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met
180 185 190

Lys Ile Ile Val Ile Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala

Gly Tyr Leu Met Ser Gly Asp Gly Val Tyr Ala Ser Asn Leu Asn Leu
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Ile Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile
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<210> 12

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<212> DNA

<213> Marine eubacteria

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Val Ser Phe Trp Leu Val Thr Ala Gly Met Leu Ala Ala Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Thr Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Arg
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Val Val Glu Phe Tyr
100 105 110

Leu Ile Leu Ala Ala Cys Thr Ser Val Ala Ala Ser Leu Phe Lys Lys
115 120 125

Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu
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Trp Leu Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala
165 170 175

Val Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met
180 185 190

Met Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala
195 200 205

Gly Tyr Leu Met Gly Gly Glu Gly Val Tyr Ala Ser Asn Leu Asn Leu
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| aacttaaacc ttatataaa ccttgctgac tttgttaaca agattctatt tggttgatc | 720 |
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35 40 45

Phe Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Thr Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Arg
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr
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Leu Ile Leu Ala Ala Cys Thr Asn Val Ala Ala Ser Leu Phe Lys Lys
115 120 125

02716.0005.NPUS01.ST25.txt

Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu
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Ala Gly Leu Ala Pro Val Trp Pro Ala Phe Ile Ile Gly Met Ala Gly
 145 150 155 160

Trp Leu Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala
 165 170 175

Val Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met
 180 185 190

Val Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala
 195 200 205

Gly Tyr Leu Met Gly Gly Glu Gly Val Tyr Ala Ser Asn Leu Asn Leu
 210 215 220

Ile Tyr Asn Leu Ala Asp Leu Val Asn Lys Ile Leu Phe Gly Leu Ile
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| aaaacttac ttactgtatc tggtttaatt actggatag cttttggca ttatctctat | 240 | |
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| tttgcaggcg aagctggatt ggctcctgta tggcctgctt tcattattgg tatggctgga | 480 | |
| tggttataca tgatttatga gctatatatg ggtgaaggta aggctgctgt aagtactgca | 540 | |
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| atttatcctg ctggatatgc tgctggttac ctaatgggtg gcgaagggtgt atacgcttca | 660 | |
| aacttaaacc ttatataaa cttgccgac cttgttaaca agattctatt tggtttgatc | 720 | |

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756

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<211> 251
<212> PRT
<213> Marine eubacteria

<400> 17

Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro
1 5 10 15

Thr Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly
20 25 30

Val Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Thr Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr
100 105 110

Leu Ile Leu Ala Ala Ala Thr Asn Val Ala Ala Gly Leu Phe Lys Lys
115 120 125

Leu Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu
130 135 140

Ala Gly Ile Met Asn Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala
145 150 155 160

Trp Val Tyr Met Ile Tyr Glu Leu Tyr Ala Gly Glu Gly Lys Ser Ala
165 170 175

Cys Asn Thr Ala Ser Pro Ser Val Gln Ser Ala Tyr Asn Thr Met Met
180 185 190

Ala Ile Ile Val Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr
195 200 205

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Gly Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile
 210 215 220

Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile
 225 230 235 240

Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 18

<211> 251

<212> PRT

<213> Marine eubacteria

<400> 18

Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro
 1 5 10 15

Thr Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly
 20 25 30

Val Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe
 35 40 45

Phe Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu
 50 55 60

Thr Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr
 65 70 75 80

Met Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg
 85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr
 100 105 110

Leu Ile Leu Ala Ala Ala Thr Asn Val Ala Ala Gly Leu Phe Lys Lys
 115 120 125

Leu Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu
 130 135 140

Ala Gly Ile Met Asn Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala
 145 150 155 160

Trp Val Tyr Met Ile Tyr Glu Leu Tyr Ala Gly Glu Gly Lys Ser Ala
 165 170 175

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Cys Asn Thr Ala Ser Pro Ser Val Gln Ser Ala Tyr Asn Thr Met Met
 180 185 190

Ala Ile Ile Val Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr
 195 200 205

Gly Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile
 210 215 220

Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile
 225 230 235 240

Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 19
 <211> 753
 <212> DNA
 <213> Marine eubacteria

<400> 19
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 ggtgggtggc accttgatgc tagtgattac actgggtttt ctttttggtt agttactgct 120
 gctttattag catctactgt atttttcttt gttgaaagag atagagttc tgcaaaatgg 180
 aaaacatcat taactgtatc tggcttgc ttactgttactggatttgc ttacatgtac 240
 atgagagggg tatggattga aactgggtat tcgccaactg tatttagata cattgattgg 300
 ttactaacag ttcctctatt aatatgtcaa ttctacttaa ttcttgctgc tgctactaat 360
 gttgctgctg gcctgtttaa gaaattattt gttggttctc ttgttatgct tgtgtttgg 420
 tacatgggtg aagcaggaat tatgaacgct tgggtgcatt tcgttattgg gtgttttagct 480
 tgggtataaca tgatttatga gctttggctt ggagaaggaa aagctgcgtg taatacagca 540
 agtcctgctg ttcagtcagc ttacaacaca atgatgatga tcatacatctt tggttggca 600
 atttatccctg tagtttattt cacaggttac ctaatgggtg acggtggtatc agcacttaac 660
 tttaaacctta tctataacct tgctgacttt gttaacaaga ttctatttgg tttaattata 720
 tggaaatgttg ctgttaaaga atcttctaattt gct 753

<210> 20
 <211> 753
 <212> DNA
 <213> Marine eubacteria

<400> 20
 accatggta aattattact gatattaggt agtgttattg cacttcctac atttgctgca 60
 ggtgggtggc accttgatgc tagtgattac actgggtttt ctttttggtt agttactgct 120

02716.0005.NPUS01.ST25.txt

| | |
|-------------------------------------------------------------------|-----|
| gctttattag catctactgt atttttctt gttgaaagag atagagttc tgcaaaatgg | 180 |
| aaaacatcat taactgtatc tggtcttgc ttactatgtac | 240 |
| atgagagggg tatggattga aactggtgat tcgccaactg tatttagata cattgattgg | 300 |
| ttactaacag ttcctctatt aatatgtcaa ttctacttaa ttcttgctgc tgctactaat | 360 |
| gttgctgctg gcctgtttaa gaaattattt gttgggtctc ttgttatgct tgtgtttgg | 420 |
| tacatgggtg aagcaggaat tatgaacgct tgggtgcat tcgttattgg gtgttagct | 480 |
| tgggtataca tgatttatga gctttggctt ggagaaggaa aagctgcgtg taatacagca | 540 |
| agtcctgctg ttcagtcagc ttacaacaca atgatgatga tcatacatctt tggttggca | 600 |
| atttatcctg taggttattt cacagttac ctaatgggtg acggtggtc agcacttaac | 660 |
| ttaaaccta tctataacct tgctgacttt gttaacaaga ttctatttgg tttaattata | 720 |
| tggaatgttgc ctgttaaaga atcttctaat gct | 753 |

<210> 21
<211> 251
<212> PRT
<213> Marine eubacteria

<400> 21

Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro
1 5 10 15

Thr Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly
20 25 30

Val Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Thr Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr
100 105 110

Leu Ile Leu Ala Ala Ala Thr Asn Val Ala Ala Gly Leu Phe Lys Lys
115 120 125

Leu Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu
Page 18

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 130 135 140

Ala Gly Ile Met Asn Ala Trp Gly Ala Phe Val Ile Gly Cys Leu Ala
 145 150 155 160

Trp Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ala Ala
 165 170 175

Cys Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met
 180 185 190

Tyr Ile Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr
 195 200 205

Gly Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile
 210 215 220

Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile
 225 230 235 240

Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 22

<211> 753

<212> DNA

<213> Marine eubacteria

<400> 22

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| gggtgggttg accttgatgc tagtgattac actgggtttt cttttggtt agttactgct | 120 |
| gctttattag catctactgt atttttcttt gttgaaagag atagagttc tgcaaatgg | 180 |
| aaaacatcat taactgtatc tggcttggtt actggatttg ctttctggca ttacatgtac | 240 |
| atgagagggg tatggattga aactggtgat tcgccaactg tattnagata cattgattgg | 300 |
| ttactaacag ttcccttatt aatatgtcaa ttctacttaa ttcttgctgc tgcaactaat | 360 |
| gttgctgctg gcctgtttaa gaaattattg gttggttctc ttgttatgct tgtgtttgg | 420 |
| tacatgggtg aggccaggaat tatgaacgct tgggtgcatt tcgttattgg gtgttagct | 480 |
| tgggtataca tgatttatga actatggct ggagaaggca aggctgcatt taatactgca | 540 |
| agtccctgctg tgcaatcagc ttacaacaca atgatgtata taatcatctt tggttggca | 600 |
| atttatcctg taggttattt cacaggttac ctaatgggtg acggtgatc agctcttaac | 660 |
| ttaaacctta tctataacct tgctgacttt gttacaaga ttctatttgg tttattata | 720 |
| tggaatgttg ctgttaaaga atcttctaat gct | 753 |

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<210> 23
<211> 251
<212> PRT
<213> Marine eubacteria

<400> 23

Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro
1 5 10 15

Thr Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly
20 25 30

Val Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Thr Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr
100 105 110

Leu Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys
115 120 125

Leu Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu
130 135 140

Ala Gln Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala
145 150 155 160

Trp Val Tyr Met Ile Tyr Glu Leu Tyr Ala Gly Glu Gly Lys Ser Ala
165 170 175

Cys Asn Thr Ala Ser Pro Ser Val Gln Ser Ala Tyr Asn Thr Met Met
180 185 190

Ala Ile Ile Val Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr
195 200 205

Gly Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile
210 215 220

02716.0005.NPUS01.ST25.txt

Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Leu Gly Leu Ile Ile
225 230 235 240

Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 24
<211> 753
<212> DNA
<213> Marine eubacteria

<400> 24
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gctctattag catctactgt atttttcttt gttgaaagag atagagttc tgcaaaatgg 180
aaaacatcat taactgtatc tggtcttgc ttactgttactggttattg ctttctggca ttacatgtac 240
atgagagggg tatggattga aactgggtgat tcgccaactg tattnagata cattgattgg 300
ttactaacag ttcccttatt aatatgtgaa ttctacttaa ttcttgctgc tgctactaat 360
gttgctggat cattatttaa gaaattacta gttggttctc ttgttatgct tgtgtttgg 420
tacatgggtg aagcacaaat tatggctgca tggcctgcat tcattattgg gtgttagct 480
tgggtataca tgatttatga actatatgct ggagaaggaa aatctgcatg taatactgca 540
agtcccttcgg ttcaatcagc ttacaacaca atgatggcta tcatagtctt cggttggca 600
atttatcctg taggttattt cacaggttac ctaatgggtg acggtggttc agctcttaac 660
ttaaacctta tttataacct tgctgacttt gttaacaaga ttctacttgg tttattata 720
tggaatgttg ctgttaaaga atcttctaat gct 753

<210> 25
<211> 249
<212> PRT
<213> Marine eubacteria

<400> 25

Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro
1 5 10 15

Thr Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly
20 25 30

Val Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

02716.0005.NPUS01.ST25.txt

Thr Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr
100 105 110

Leu Ile Leu Ala Ala Ala Asn Val Ala Gly Ser Leu Phe Lys Lys
115 120 125

Leu Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu
130 135 140

Ala Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala
145 150 155 160

Trp Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala
165 170 175

Cys Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met
180 185 190

Tyr Ile Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr
195 200 205

Gly Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile
210 215 220

Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile
225 230 235 240

Trp Asn Val Ala Val Lys Glu Ser Ser
245

<210> 26
<211> 748
<212> DNA
<213> Marine eubacteria

<400> 26
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ggtgtggtg accttgatgc tagtgattac actgggtttt cttttggtt agttactgct 120
gctttattag catctactgt attttcttt gttgaaagag atagagttc tgcaaatgg 180
aaaacatcat taactgtatc tggcttggtt actggatttg ctttctggca ttacatgtac 240

02716.0005.NPUS01.ST25.txt

| | |
|---------------------------------------------------------------------|-----|
| atgagagggg tatggattga aactggtgat tcgccaactg tatttagata cattgattgg | 300 |
| ttactaacag ttcccttatt aatatgtcaa ttctacttaa ttcttgctgc tgca gcta at | 360 |
| gttgctggat cattattaa gaaattacta gttggttctc ttgttatgct tgtgtttgg | 420 |
| tacatgggtg aagcaggaat catggctgca tggcctgcat tcattattgg gtgtttagct | 480 |
| tgggtataca tgatttatga attatggct ggagaaggaa aatctgcatg taatactgca | 540 |
| agtcctgctg tgcaatcagc ctacaacaca atgatgtata ttatcatctt tggttggcg | 600 |
| atttatcctg taggttattt cacaggttac ttgatgggtg acggtggtc agctcttaac | 660 |
| ttaaacctta tctataacct tgctgacttt gttaacaaga ttctatttgg tttaattata | 720 |
| tggaatgttg ctgttaaaga atcttcta | 748 |

<210> 27

<211> 251

<212> PRT

<213> Marine eubacteria

<400> 27

Thr Met Gly Lys Leu Leu Leu Ile Ile Gly Ser Val Ile Ala Leu Pro
1 5 10 15

Thr Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly
20 25 30

Val Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Thr Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr
100 105 110

Leu Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys
115 120 125

Leu Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu
130 135 140

02716.0005.NPUS01.ST25.txt

Ala Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala
 145 150 155 160

Trp Val Tyr Met Ile Tyr Glu Leu Tyr Ala Gly Glu Gly Lys Ser Ala
 165 170 175

Cys Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met
 180 185 190

Tyr Ile Ile Val Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr
 195 200 205

Gly Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile
 210 215 220

Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile
 225 230 235 240

Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 28

<211> 753

<212> DNA

<213> Marine eubacteria

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|-------------------------------------------------------------------|-----|--|
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| ggtgtgcggtg accttgatgc tagtgattac actgggtttt cttttggtt agttacagct | 120 | |
| gctctattag catctactgt atttttcttt gttgaaagag atagagttc tgcaaatgg | 180 | |
| aaaacatcat taactgtatc tggcttgtt actggatttg ctttctggca ttacatgtac | 240 | |
| atgagaggag tatggattga aactggtgat tcgccaactg tatttagata cattgattgg | 300 | |
| ttactaacag ttcccttatt aatatgtcaa ttctacttaa ttcttgctgc tgcaactaat | 360 | |
| gttgcggct cattattnaa gaaaacttcta gttggttctc ttgttatgct tgtgtttgg | 420 | |
| tacatgggtg aagcaggaat tatggcagct tggcctgcat tcattattgg gtgttagct | 480 | |
| tgggtatata tgatttatga actatatgct ggagaaggaa aatctgcatg taatacagca | 540 | |
| agtcctgctg tgcaatcagc ttacaacaca atgatgtata ttatcgctt tggtggcg | 600 | |
| atttatcctg taggttattt cacaggttac ctgatgggtg acggtgatc agctcttaac | 660 | |
| ttaaacctta tctataacct tgctgacttt gttaacaaga ttctatttgg tttaattata | 720 | |
| tggaatgttg ctgttaaaga atcttctaat gct | 753 | |

<210> 29

<211> 249

02716.0005.NPUS01.ST25.txt

<212> PRT

<213> Marine eubacteria

<400> 29

Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro
1 5 10 15

Thr Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly
20 25 30

Val Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Thr Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr
100 105 110

Leu Ile Leu Ala Ala Ala Thr Asn Val Ala Ala Gly Leu Phe Lys Lys
115 120 125

Leu Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu
130 135 140

Ala Gly Ile Met Asn Ala Trp Gly Ala Phe Val Ile Gly Cys Leu Ala
145 150 155 160

Trp Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ala Ala
165 170 175

Cys Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met
180 185 190

Tyr Ile Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr
195 200 205

Gly Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile
210 215 220

Tyr Asn Leu Ala Asp Phe Val Asn Lys Asn Leu Phe Gly Leu Ile Ile
225 230 235 240

02716.0005.NPUS01.ST25.txt

Trp Asn Val Ala Val Lys Glu Ser Ser
245

<210> 30
<211> 748
<212> DNA
<213> Marine eubacteria

<400> 30
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ggtgtgggtg accttgatgc tagtgattac actgggtttt ctttttggtt agttactgct 120
gctctattag catctactgt atttttcttt gttgaaagag atagagttc tgcaaaatgg 180
aaaacatcat taactgtatc gggcttgtt actggatttg ctttctggca ttacatgtac 240
atgagagggg tatggattga gactgggtat tcgccaactg tatttagata cattgattgg 300
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ttaaaccta tctataacct tgctgacttt gttaacaaga atctatttgg tttaattata 720
tggaaatgttg ctgttaaaga atcttctta 748

<210> 31
<211> 251
<212> PRT
<213> Marine eubacteria

<400> 31

Thr Met Gly Lys Leu Leu Arg Ile Leu Gly Ser Val Ile Ala Leu Pro
1 5 10 15

Thr Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly
20 25 30

Val Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Thr Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr
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65

70

75

80

Met Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg
 85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr
 100 105 110

Leu Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys
 115 120 125

Leu Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu
 130 135 140

Ala Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala
 145 150 155 160

Trp Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala
 165 170 175

Cys Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met
 180 185 190

Tyr Ile Ile Ile Val Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr
 195 200 205

Gly Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile
 210 215 220

Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile
 225 230 235 240

Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 32

<211> 753

<212> DNA

<213> Marine eubacteria

<400> 32

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| ggtggcggtg accttgatgc tagtgattac actgggtt cttttgggtt agttacagct | 120 |
| gctctattag catctactgt atttttcttt gttgaaagag atagagttc tgcaaaatgg | 180 |
| aaaacatcat taactgtatc tggtcttggtt actggatttg ctttctggca ttacatgtat | 240 |
| atgagaggag tatggattga aactgggtat tcgccaactg tattttagata cattgattgg | 300 |

02716.0005.NPUS01.ST25.txt

| | | | | | | |
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| ttactaacag | ttcccttatt | aatatgtcaa | ttctacttaa | ttcttgctgc | tgcaactaat | 360 |
| gttgctggat | cattatcaa | gaaattacta | gttggttctc | ttgttatgct | tgtgttggt | 420 |
| tacatgggtg | aagcaggaat | catggctgca | tggcctgcat | tcattattgg | gtgttagct | 480 |
| tgggtataca | tgatttatga | actatgggct | ggagaaggaa | aatctgcatg | taatactgca | 540 |
| agtccctgctg | tgcaatcagc | ttacaacaca | atgatgtata | tcatcatcgt | tggttggcg | 600 |
| atttatcctg | taggttattt | cacaggttac | ctgatgggtg | acggtggatc | agctcttaac | 660 |
| ttaaaccta | tctataacct | tgctgacttt | gttaacaaga | ttctatttgg | tttaattata | 720 |
| tggaatgttg | ctgttaaaga | atcttctaat | gct | | | 753 |

<210> 33

<211> 251

<212> PRT

<213> Marine eubacteria

<400> 33

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Met | Gly | Lys | Leu | Leu | Ile | Leu | Gly | Ser | Val | Ile | Ala | Leu | Pro |
| 1 | | | | 5 | | | | 10 | | | | | 15 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Phe | Ala | Ala | Gly | Gly | Gly | Asp | Leu | Asp | Ala | Ser | Asp | Tyr | Thr | Gly |
| | | | | 20 | | | | 25 | | | | | 30 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Ser | Phe | Trp | Leu | Val | Thr | Ala | Ala | Leu | Leu | Ala | Ser | Thr | Val | Phe |
| | | | | 35 | | | 40 | | | | | 45 | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Phe | Val | Glu | Arg | Asp | Arg | Val | Ser | Ala | Lys | Trp | Lys | Thr | Ser | Leu |
| | | | | 50 | | | 55 | | | | 60 | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Val | Ser | Gly | Leu | Val | Thr | Gly | Ile | Ala | Phe | Trp | His | Tyr | Met | Tyr |
| | | | | 65 | | | 70 | | | | 75 | | | 80 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Arg | Gly | Val | Trp | Ile | Glu | Thr | Gly | Asp | Ser | Pro | Thr | Val | Phe | Arg |
| | | | | 85 | | | 90 | | | | | 95 | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Tyr | Ile | Asp | Trp | Leu | Leu | Thr | Val | Pro | Leu | Leu | Ile | Cys | Glu | Phe | Tyr |
| | | | | 100 | | | 105 | | | | | 110 | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Ile | Leu | Ala | Ala | Ala | Thr | Asn | Val | Ala | Gly | Ser | Leu | Phe | Lys | Lys |
| | | | | 115 | | | 120 | | | | | 125 | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Leu | Val | Gly | Ser | Leu | Val | Met | Leu | Val | Phe | Gly | Tyr | Met | Gly | Glu |
| | | | | 130 | | | 135 | | | | | 140 | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Gly | Ile | Met | Ala | Ala | Trp | Pro | Ala | Phe | Ile | Ile | Gly | Cys | Leu | Ala |
| | | | | 145 | | | 150 | | | | 155 | | | 160 | |

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Trp Val Tyr Met Ile Tyr Glu Leu Tyr Ala Gly Glu Gly Lys Ser Ala
165 170 175

Cys Asn Thr Ala Ser Pro Ser Val Gln Ser Ala Tyr Asn Thr Met Met
180 185 190

Ala Ile Ile Val Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr
195 200 205

Gly Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile
210 215 220

Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile
225 230 235 240

Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 34

<211> 753

<212> DNA

<213> Marine eubacteria

<400> 34

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gctctattag catctactgt atttttcttt gttgaaagag atagagttc tgcaaatgg 180
aaaacatcat taactgtatc tggcttggtt actggatttg ctttctggca ttacatgtac 240
atgagaggag tatggattga aactgggtat tcgccaactg tattnagata cattgattgg 300
ttactaacatg ttcccttatt aatatgtgaa ttctacttaa ttcttgctgc tgcaactaat 360
gttgcggct cattattnaa gaaacttcta gttggttctc ttgttatgct tgtgtttgg 420
tacatgggtg aagcaggaat tatggcagct tggcctgcat tcattattgg gtgttttagct 480
tgggtataca tgatttatga actatatgct ggagaaggaa aatctgcatg taatactgca 540
agtcccttcgg ttcaatcagc ttacaacaca atgatggcta tcatagtctt cggttgggca 600
atttatcctg taggttattt cacaggttac ctaatgggtg acggtggtac agctcttaac 660
ttaaacctta tttataacct tgctgacttt gttaacaaga ttcttattgg tttaattata 720
tggaaatgttgc tgtaaaga atcttctaat gct 753

<210> 35

<211> 251

<212> PRT

<213> Marine eubacteria

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<400> 35

Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro
1 5 10 15Thr Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly
20 25 30Val Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe
35 40 45Phe Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60Thr Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr
65 70 75 80Met Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg
85 90 95Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr
100 105 110Leu Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys
115 120 125Leu Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu
130 135 140Ala Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala
145 150 155 160Trp Val Tyr Met Ile Tyr Glu Leu Tyr Ala Gly Glu Gly Lys Ser Ala
165 170 175Cys Asn Thr Ala Ser Pro Ser Val Gln Ser Ala Tyr Asn Thr Met Met
180 185 190Ala Ile Ile Val Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr
195 200 205Gly Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile
210 215 220Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile
225 230 235 240Trp Asn Ala Ala Val Lys Glu Ser Ser Asn Ala
Page 30

<210> 36
<211> 753
<212> DNA
<213> Marine eubacteria

<400> 36
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gctttattag catctactgt attttcttt gttgaaagag atagagttc tgcaaatgg 180
aaaacatcat taactgtatc tggtcttgc actggatttg ctccctggca ttacatgtac 240
atgagagggg tatggattga aactgggtat tcgccaactg tatttagata cattgattgg 300
ttactaacag ttccctctatt aatatgtgaa ttctacttaa ttcttgctgc tgctactaat 360
gttgcggct cattatttaa gaaacttcta gttggttctc ttgttatgct tgtgtttgg 420
tacatgggtg aagcaggaat tatggcagct tggcctgcat tcattattgg gtgttttagct 480
tgggtataaca tgatttatga actatatgct ggagaaggaa aatctgcatg taataactgca 540
agtcccttcgg ttcaatcagc ttacaacaca atgatggcta tcatagtctt cggttggca 600
atttatcctg tagtttattt cacaggttac ctaatgggtg acggtggtac agctcttaac 660
ttaaacctta tttataacct tgctgacttt gttaacaaga ttctatttgg tttattata 720
tggaaatgctg ctgttaaaga atcttctaat gct 753

<210> 37
<211> 251
<212> PRT
<213> Marine eubacteria

<400> 37

Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro
1 5 10 15

Thr Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly
20 25 30

Val Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Thr Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr
65 70 75 80

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Met Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg
 85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr
 100 105 110

Leu Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys
 115 120 125

Leu Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu
 130 135 140

Ala Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala
 145 150 155 160

Trp Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala
 165 170 175

Cys Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met
 180 185 190

Tyr Ile Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr
 195 200 205

Gly Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile
 210 215 220

Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile
 225 230 235 240

Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 38

<211> 753

<212> DNA

<213> Marine eubacteria

<400> 38

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ggtgtgggtg accttgatgc tagtgattac actgggtttt cttttggtt agttactgct 120

gctttattag catctactgt atttttctt gttgaaagag atagagttc tgcaaatgg 180

aaaacatcat taactgtatc tggcttgatc actggatttg ctttctggca ttacatgtat 240

atgagagggg tatggattga aactgggtat tcgccaactg tathtagata catagattgg 300

ttactaacag ttcccttatt aatatgtcaa ttctacttaa ttcttgccgc tgcaactaat 360

gttgctggat cattatcaa gaaattactt gttggttctc ttgttatgct tgtgtttgg 420

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tacatgggtg aagcaggaat catggctgca tggcctgcat tcattattgg gtgttagct 480
tgggtataca tgatttatga actatggct ggagaaggaa aatctgcac taataactgca 540
agtccctgctg tgcaatcagc ttacaacaca atgatgtata tcatcatctt tggtggcg 600
atttatcctg tagtttattt cacaggttac cttatgggtg acggtggtc agcacttaac 660
ttaaaccta tttataacct tgctgacttt gttacaaga ttctatttgg tttaattata 720
tggaatgttgc ctgttaaaga atcttctaat gct 753

<210> 39
<211> 251
<212> PRT
<213> Marine eubacteria

<400> 39

Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro
1 5 10 15

Thr Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly
20 25 30

Val Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Thr Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr
100 105 110

Leu Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys
115 120 125

Leu Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu
130 135 140

Ala Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Val Gly Cys Leu Ala
145 150 155 160

Trp Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala
165 170 175

02716.0005.NPUS01.ST25.txt

Cys Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met
180 185 190

Tyr Ile Ile Ile Val Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr
195 200 205

Gly Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile
210 215 220

Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile
225 230 235 240

Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 40

<211> 753

<212> DNA

<213> Marine eubacteria

<400> 40

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| ggtggcggtg accttgatgc tagtgattac actgggtttt cttttggtt agttacagct | 120 |
| gctctattag cgtctactgt attttcttt gttgaaagag atagagttc tgcaaatgg | 180 |
| aaaacatcat taactgtatc tggcttgtt actggatttg ctttctggca ttacatgtat | 240 |
| atgagaggag tatggattga aactggtgat tcgccaactg tatttagata cattgattgg | 300 |
| ttactaacag ttcccttatt aatatgtaa ttctacttaa ttcttgctgc tgcaactaat | 360 |
| gttgcggct cattatcaa gaaacttcta gttggttctc ttgttatgct tgtgtttgg | 420 |
| tacatgggtg aagcaggaat aatggcggtc tggcctgcat tcacgttgg atgttttagca | 480 |
| tgggtatata tgatttatga actatggct ggtgaaggaa aatctgcatg taatactgca | 540 |
| agtccctgctg tacagtcagc ttacaacaca atgatgtata tcacatcgat tggttggca | 600 |
| atttatcctg taggttattt cacaggttac ctaatgggtg acggtggtac agctcttaat | 660 |
| ctaaaccta tttataacct tgctgactt gttacaaga ttcttattgg tttaattata | 720 |
| tggaaatgttg ctgttaaaga atcttctaat gct | 753 |

<210> 41

<211> 252

<212> PRT

<213> Marine eubacteria

<400> 41

Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Ala Ile Ala Leu Pro
Page 34

Ser Phe Ala Ala Ala Gly Gly Asp Leu Asp Ile Ser Asp Thr Val Gly
20 25 30

Val Ser Phe Trp Leu Val Thr Ala Gly Met Leu Ala Ala Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Thr Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Arg
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr
100 105 110

Leu Ile Leu Ala Ala Cys Thr Ser Val Ala Ala Ser Leu Phe Lys Lys
115 120 125

Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu
130 135 140

Ala Gly Leu Ala Pro Val Leu Pro Ala Phe Ile Leu Gly Met Ala Gly
145 150 155 160

Trp Leu Tyr Met Ile Tyr Glu Leu His Met Gly Glu Gly Lys Ala Ala
165 170 175

Val Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met
180 185 190

Lys Ile Ile Val Ile Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala
195 200 205

Gly Tyr Leu Met Ser Gly Asp Gly Val Tyr Ala Ser Asn Leu Asn Leu
210 215 220

Ile Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile
225 230 235 240

Ile Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

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<210> 42
 <211> 756
 <212> DNA
 <213> Marine eubacteria

<400> 42
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 gctgggtggcg atctagatat aagtgatact gttgggtgtt cattctggct ggttacagct 120
 ggtatgttag cgccaactgt attctttttt gtagaaagag accaagtca gctaagg 180
 aaaacttcac ttactgtatc tggtttaatt actggatag ctttttggca ttatctctac 240
 atgagaggtg tttggataga tactggtgat acaccaacag tattnagata tattgattgg 300
 ctattaactg ttccattaca aatggttgag ttctatctaa ttcttgctgc ttgtacaagt 360
 gttgctgctt cattatcaa gaagcttcta gctggttcat tagtaatgtt aggtgctgga 420
 tttgcaggcg aagctggttt agctcctgta ttacctgctt tcattcttgg tatggctggt 480
 tggttataca tgatttatga gctacatatg ggtgaaggta aggctgctgt aagtactgca 540
 agtcctgctg ttaactctgc ttacaatgca atgatgaaga ttattgttat tggatggca 600
 atttacccctg ctggatatgc tgctggttac ctaatgagtg gtgacggtgt atacgcttca 660
 aacttaaacc ttatataaa ccttgctgac tttgttaaca agattcttatt tggttgatc 720
 atttggaaatg ttgctgttaa agaatcttct aatgct 756

<210> 43
 <211> 252
 <212> PRT
 <213> Marine eubacteria

<400> 43

Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Ala Ile Ala Leu Pro
 1 5 10 15

Ser Phe Ala Ala Ala Gly Gly Asp Leu Asp Ile Ser Asp Thr Val Gly
 20 25 30

Val Ser Phe Trp Leu Val Thr Ala Gly Met Leu Ala Ala Thr Val Phe
 35 40 45

Phe Phe Val Glu Arg Asp Gln Val Ser Ala Glu Trp Lys Thr Ser Leu
 50 55 60

Thr Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr
 65 70 75 80

Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Arg
 85 90 95

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Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr
 100 105 110

Leu Ile Leu Ala Ala Cys Thr Ser Val Ala Ala Ser Leu Phe Lys Lys
 115 120 125

Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu
 130 135 140

Ala Gly Leu Ala Pro Val Leu Pro Ala Phe Ile Ile Gly Met Ala Gly
 145 150 155 160

Trp Leu Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala
 165 170 175

Val Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met
 180 185 190

Met Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala
 195 200 205

Gly Tyr Leu Met Gly Gly Glu Gly Val Tyr Ala Ser Asn Leu Asn Leu
 210 215 220

Ile Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile
 225 230 235 240

Ile Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 44
 <211> 756
 <212> DNA
 <213> Marine eubacteria

| | | |
|---------------------------------------------------------------------|-----|--|
| <400> 44 | | |
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| gctgggtggcg atctagatat aagtgatact gttgggtgttt cattctggct ggttacagct | 120 | |
| ggtatgttag cggcaactgt gttctttttt gtagaaagag accaagtca gctgagtg | 180 | |
| aaaacttcac ttactgtatc tggtttaatt actggatag ctttttggca ttatcttat | 240 | |
| atgagaggtg tttggataga tactggatgat accccaacag tattcagata tattgattgg | 300 | |
| ttattaactg ttccattaca aatggttgag ttctatctaa ttcttgctgc ttgtacaagt | 360 | |
| gttgctgctt cattatcaa gaagcttcta gctggatcat tagtaatgtt aggtgctgga | 420 | |
| tttgcaggcg aagctggatt agctcctgta ttacctgctt tcattattgg tatggctgga | 480 | |

02716.0005.NPUS01.ST25.txt

| | | | | | | |
|------------|------------|------------|------------|-------------|------------|-----|
| tggttataca | tgatttatga | gctatatatg | ggtaaggta | aggctgtgt | aagtactgca | 540 |
| agtcctgctg | ttaactctgc | atacaacgca | atgatgatga | ttattgttgt | tggatggca | 600 |
| atttatcctg | ctggatatgc | tgctggttac | ctaatgggtg | gcgaagggtgt | atacgcttca | 660 |
| aacttaaacc | ttatatataa | ccttgctgac | tttgttaaca | agattcttatt | tggtttgatc | 720 |
| attingaatg | ttgctgttaa | agaatcttct | aatgct | | | 756 |

<210> 45

<211> 252

<212> PRT

<213> Marine eubacteria

<400> 45

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Met | Gly | Lys | Leu | Leu | Leu | Ile | Leu | Gly | Ser | Ala | Ile | Ala | Leu | Pro |
| 1 | | | | 5 | | | | 10 | | | | | | 15 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Phe | Ala | Ala | Ala | Gly | Gly | Asp | Leu | Asp | Ile | Ser | Asp | Thr | Val | Gly |
| | | | | | 20 | | | 25 | | | | | 30 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Ser | Phe | Trp | Leu | Val | Thr | Ala | Gly | Met | Leu | Ala | Ala | Thr | Val | Phe |
| | | | | | 35 | | | 40 | | | | | 45 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Phe | Val | Glu | Arg | Asp | Gln | Val | Ser | Ala | Lys | Trp | Lys | Thr | Ser | Leu |
| | | | | | 50 | | | 55 | | | 60 | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Val | Ser | Gly | Leu | Ile | Thr | Gly | Ile | Ala | Phe | Trp | His | Tyr | Leu | Tyr |
| | | | | | 65 | | | 70 | | | 75 | | 80 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Arg | Gly | Val | Trp | Ile | Asp | Thr | Gly | Asp | Thr | Pro | Thr | Val | Phe | Arg |
| | | | | | 85 | | | 90 | | | | | 95 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Tyr | Ile | Asp | Trp | Leu | Leu | Thr | Val | Pro | Leu | Gln | Met | Val | Glu | Phe | Tyr |
| | | | | | 100 | | | 105 | | | 110 | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Ile | Leu | Ala | Ala | Cys | Thr | Asn | Val | Ala | Ala | Ser | Leu | Phe | Lys | Lys |
| | | | | | 115 | | | 120 | | | 125 | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Leu | Ala | Gly | Ser | Leu | Val | Met | Leu | Gly | Ala | Gly | Phe | Ala | Gly | Glu |
| | | | | | 130 | | | 135 | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Gly | Leu | Ala | Pro | Val | Trp | Pro | Ala | Phe | Ile | Ile | Gly | Met | Ala | Gly |
| | | | | | 145 | | | 150 | | | 155 | | 160 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Trp | Leu | Tyr | Met | Ile | Tyr | Glu | Leu | Tyr | Met | Gly | Glu | Gly | Lys | Ala | Ala |
| | | | | | 165 | | | 170 | | | | | 175 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Ser | Thr | Ala | Ser | Pro | Ala | Val | Asn | Ser | Ala | Tyr | Asn | Ala | Met | Met |
| | | | | | | | | | | | | | | | |

02716.0005.NPUS01.ST25.txt
180 185 190

Met Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala
195 200 205

Gly Tyr Leu Met Gly Gly Glu Gly Val Tyr Ala Ser Asn Leu Asn Leu
210 215 220

Ile Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile
225 230 235 240

Ile Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 46

<211> 756

<212> DNA

<213> Marine eubacteria

<400> 46

accatgggta aattattact gatatttagt agtgctattg cacttccatc atttgctgct 60
gctgggtggcg atctagatat aagtgatact gttgggtgtt cattctggct ggttacagct 120
ggtatgttag cgccaactgt gttctttttt gtagaaagag accaagtcag cgctaagtgg 180
aaaacttcac ttactgtatc tggtttaatt actggtagat cctttggca ttatctctat 240
atgagaggtg tttggataga cactggtgat accccaacag tattcagata tattgattgg 300
ttattaactg ttccattaca aatggttgag ttctatctaa ttcttgctgc ttgtacaaat 360
gttgctgctt cattatttaa gaagcttcta gctggttcat tagtaatgtt aggtgctgga 420
tttgcaggcg aagctggatt agctcctgta tggcctgctt tcattattgg tatggctgga 480
tggttataca tgatttatga gctatatatg ggtgaaggta aggctgctgt aagtactgca 540
agtcctgctg ttaactctgc atacaacgca atgatgatga ttattgttgt tggatggca 600
atttatcctg ctggatatgc tgctggttac ctaatgggtg gcgaagggtgt atacgcttca 660
aacctaaacc ttatataaa ccttgctgac tttgttaaca agattcttatt tggtttgatc 720
atttggaaatg ttgctgttaa agaatcttct aatgct 756

<210> 47

<211> 252

<212> PRT

<213> Marine eubacteria

<400> 47

Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Ala Ile Ala Leu Pro
1 5 10 15

02716.0005.NPUS01.ST25.txt

Ser Phe Ala Ala Ala Gly Gly Asp Leu Asp Ile Ser Asp Thr Val Gly
 20 25 30

Val Ser Phe Trp Leu Val Thr Ala Gly Met Leu Ala Ala Thr Val Phe
 35 40 45

Phe Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu
 50 55 60

Thr Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr
 65 70 75 80

Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Arg
 85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr
 100 105 110

Leu Ile Leu Ala Ala Cys Thr Ser Val Ala Ala Ser Leu Phe Lys Lys
 115 120 125

Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Ser Ala Gly Glu
 130 135 140

Ala Gly Leu Ala Pro Val Leu Pro Ala Phe Ile Ile Gly Met Ala Gly
 145 150 155 160

Trp Leu Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala
 165 170 175

Val Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met
 180 185 190

Met Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala
 195 200 205

Gly Tyr Leu Met Gly Gly Glu Gly Val Tyr Ala Ser Asn Leu Asn Leu
 210 215 220

Ile Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile
 225 230 235 240

Ile Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 48
 <211> 756
 <212> DNA

02716.0005.NPUS01.ST25.txt

<213> Marine eubacteria

<400> 48

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ggtatgttag cgccaactgt attctttttt gtagaaagag accaagtca gctaagtgg 180
aaaacttcac ttactgtatc tggtaatt actggtatag ctttttggca ttatctctac 240
atgagaggtg tttggataga tactggtgat acaccaacag tattnagata tattgattgg 300
ttattaactg ttccattaca aatgggttag ttctatctaa ttcttgcgc ttgtacaagt 360
gttgctgctt cattattaa gaagcttcta gctggttcat tggtaatgtt aggtgctgga 420
tctgcaggcg aagctggatt agctcctgta ttacctgctt tcattattgg tatggctgga 480
tggttataca tgatttatga gctatatacg ggtgaaggta aggctgctgt aagtactgca 540
agtcctgctg ttaactctgc atacaacgca atgatgatga ttattgttgc tggatggca 600
atttatcctg ctggatatgc tgctggttac ctaatgggtg gcgaagggtgt atacgcttca 660
aacttaaacc tcatatataa ctttgctgac tttgttaaca agattctatt tggttgatc 720
attingaatg ttgctgttaa agaatcttct aatgct 756

<210> 49

<211> 252

<212> PRT

<213> Marine eubacteria

<400> 49

Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Ala Ile Ala Leu Pro
1 5 10 15

Ser Phe Ala Ala Ala Gly Gly Asp Leu Asp Ile Ser Asp Thr Val Gly
20 25 30

Val Ser Phe Trp Leu Val Thr Ala Gly Met Leu Ala Ala Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Thr Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Arg
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr
100 105 110

02716.0005.NPUS01.ST25.txt

Leu Ile Leu Ala Ala Cys Thr Asn Val Ala Ala Ser Leu Phe Lys Lys
115 120 125

Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu
130 135 140

Ala Gly Leu Ala Pro Val Trp Pro Ala Phe Ile Ile Gly Met Ala Gly
145 150 155 160

Trp Leu Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala
165 170 175

Val Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met
180 185 190

Val Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala
195 200 205

Gly Tyr Leu Met Gly Gly Glu Gly Val Tyr Ala Ser Asn Leu Asn Leu
210 215 220

Ile Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile
225 230 235 240

Ile Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 50
<211> 756
<212> DNA
<213> Marine eubacteria

<400> 50
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gctgggtggcg atctagatat aagtgatact gttgggtgttt cattctggct ggttacagct 120
ggtatgttag cggcaactgt gttctttttt gtagaaagag accaagtca gctaaagtgg 180
aaaacttcac ttactgtatc tggtttaatt actggatag ctttttggca ttatctctat 240
atgagaggtg tttggataga cactggtgat accccaacag tattcagata tattgattgg 300
ttattaactg ttccattaca aatggttgag ttctatctaa ttcttgctgc ttgtacaaat 360
gttgctgctt cattatcaa gaagcttcta gctggttcat tagtaatgtt aggtgctgga 420
tttgcaggcg aagctggatt agctcctgta tggcctgctt tcattattgg tatggctgga 480
tggttataca tgatttatga gctatatatg ggtgaaggta aggctgctgt aagtactgca 540
agtcctgctg ttaactctgc atacaacgca atgatggta ttattgttgt tggatggca 600

02716.0005.NPUS01.ST25.txt

atttatcctg ctggatatgc tgctggttac ctaatgggtg gcgaagggtgt atacgcttca 660
aacctaaacc ttatataaa ccttgctgac tttgttaaca agattctatt tggtttgc 720
atttggaatg ttgctgttaa agaatcttct aatgct 756

<210> 51
<211> 252
<212> PRT
<213> Marine eubacteria

<400> 51

Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Ala Ile Ala Leu Pro
1 5 10 15

Ser Phe Ala Ala Ala Gly Gly Asp Leu Asp Ile Ser Asp Thr Val Gly
20 25 30

Val Ser Phe Trp Leu Val Thr Ala Gly Met Leu Ala Ala Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Thr Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Arg
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr
100 105 110

Leu Ile Leu Ala Ala Cys Thr Ser Val Ala Ala Ser Leu Phe Lys Lys
115 120 125

Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu
130 135 140

Ala Gly Leu Ala Pro Val Leu Pro Ala Phe Ile Ile Gly Met Ala Gly
145 150 155 160

Trp Leu Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala
165 170 175

Val Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met
180 185 190

02716.0005.NPUS01.ST25.txt

Met Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala
 195 200 205

Gly Tyr Leu Met Gly Gly Glu Val Tyr Ala Ser Asn Leu Asn Leu
 210 215 220

Ile Tyr Asn Leu Ala Asp Leu Val Asn Lys Ile Leu Phe Gly Leu Ile
 225 230 235 240

Ile Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 52

<211> 756

<212> DNA

<213> Marine eubacteria

<400> 52

| | |
|---------------------------------------------------------------------|-----|
| accatgggta aattattact gatatttagt agtgctattg cacttccatc atttgctgct | 60 |
| gctgggtggcg atctagatat aagtgatact gttgggtgtt cattctggct ggttacagct | 120 |
| ggtagatgttag cgccaactgt gttctttttt gtagaaagag accaagtcag cgctaagtgg | 180 |
| aaaacttcac ttactgtatc tggtttaatt actggatag cttttggca ttatctctat | 240 |
| atgagaggtg tttggataga cactggtgat accccaacag tattcagata tattgattgg | 300 |
| ttattaactg ttccattaca aatggttgag ttctatctaa ttcttgctgc ttgtacaagt | 360 |
| gttgcgtctt cattattaa gaagcttcta gctggttcat tagtaatgtt aggtgctgga | 420 |
| tttgcaggcg aagctggatt agtcctgtta ttacctgctt tcattattgg tatggctgga | 480 |
| tggttataca tgatttatga gctatatatg ggtgaaggta aggctgtgt aagtactgca | 540 |
| agtcctgtgt ttaactctgc atacaacgca atgatgatga ttattgtgt tggatggca | 600 |
| atttatcccg ctggatatgc tgctggttac ctaatgggtg gcgaagggtgt atacgcttca | 660 |
| aacttaaacc ttatataaa ctttgctgac cttgttaaca agattctatt tggtttgatc | 720 |
| attingaatg ttgctgttaa agaatcttct aatgct | 756 |

<210> 53

<211> 252

<212> PRT

<213> Marine eubacteria

<400> 53

Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Ala Ile Ala Leu Pro
 1 5 10 15

Ser Phe Ala Ala Ala Gly Gly Asp Leu Asp Ile Ser Asp Thr Val Gly
 20 25 30

02716.0005.NPUS01.ST25.txt

Val Ser Phe Trp Leu Val Thr Ala Gly Met Leu Ala Ala Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Thr Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Arg
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Val Val Glu Phe Tyr
100 105 110

Leu Ile Leu Ala Ala Cys Thr Ser Val Ala Ala Ser Leu Phe Lys Lys
115 120 125

Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu
130 135 140

Ala Gly Leu Ala Pro Val Leu Pro Ala Phe Ile Ile Gly Met Ala Gly
145 150 155 160

Trp Leu Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala
165 170 175

Val Ser Thr Ala Ser Pro Ala Val Asn Pro Ala Tyr Asn Ala Met Met
180 185 190

Met Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala
195 200 205

Gly Tyr Leu Met Gly Gly Glu Gly Val Tyr Ala Ser Asn Leu Asn Leu
210 215 220

Ile Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile
225 230 235 240

Ile Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 54
<211> 756
<212> DNA
<213> Marine eubacteria

<400> 54

02716.0005.NPUS01.ST25.txt

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| gctgggtggcg atctagatat aagtgatact gttgggtgtt cattctggct ggttacagct | 120 |
| ggtatgttag cgccaactgt gttctttttt gtagaaagag accaagtcag cgctaagtgg | 180 |
| aaaacttcac ttactgtatc tggtttaatt actggatag cttttggca ttatctctat | 240 |
| atgagaggtg tttggataga cactggtgat accccaacag tattcagata tattgattgg | 300 |
| ttattaactg ttccattaca agtgggttag ttctatctaa ttcttgctgc ttgtacaagt | 360 |
| gttgcgtcctt cattattaa gaagcttcta gctggttcat tagtaatgtt aggtgctggaa | 420 |
| tttgcaggcg aagctggatt agctcctgta ttacctgctt tcattattgg tatggctggaa | 480 |
| tggttataca tgatttatga gctatatacg ggtgaaggca aggctgctgt aagtactgca | 540 |
| agtcctgctg ttaaccctgc atacaacgca atgatgatga ttattgttgt tggatgggca | 600 |
| atttatcctg ctggatatgc tgctggttac ctaatgggtg gcgaagggtgt atacgcttca | 660 |
| aacttaaacc ttatataaa ctttgctgac tttgttaaca agattctatt tggtttgatc | 720 |
| atttggaatg ttgctgttaa agaatcttct aatgct | 756 |

<210> 55

<211> 252

<212> PRT

<213> Marine eubacteria

<400> 55

| | | | |
|-----------------------------------------------------------------|---|----|----|
| Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Ala Ile Ala Leu Pro | | | |
| 1 | 5 | 10 | 15 |

| | | | |
|-----------------------------------------------------------------|----|----|--|
| Ser Phe Ala Ala Ala Gly Gly Asp Leu Asp Ile Ser Asp Thr Val Gly | | | |
| 20 | 25 | 30 | |

| | | | |
|-----------------------------------------------------------------|----|----|--|
| val Ser Phe Trp Leu Val Thr Ala Gly Met Leu Ala Ala Thr Val Phe | | | |
| 35 | 40 | 45 | |

| | | | |
|-----------------------------------------------------------------|----|----|--|
| Phe Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu | | | |
| 50 | 55 | 60 | |

| | | | |
|-----------------------------------------------------------------|----|----|----|
| Thr Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr | | | |
| 65 | 70 | 75 | 80 |

| | | | |
|-----------------------------------------------------------------|----|----|--|
| Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Arg | | | |
| 85 | 90 | 95 | |

| | | | |
|-----------------------------------------------------------------|-----|-----|--|
| Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr | | | |
| 100 | 105 | 110 | |

Leu Ile Leu Ala Ala Cys Thr Ser Val Ala Ala Ser Leu Phe Lys Lys

02716.0005.NPUS01.ST25.txt

115

120

125

Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu
 130 135 140

Ala Gly Leu Ala Pro Val Leu Pro Ala Phe Ile Ile Gly Met Ala Gly
 145 150 155 160

Trp Leu Tyr Met Ile Tyr Glu Leu His Met Gly Glu Gly Lys Ala Ala
 165 170 175

Val Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met
 180 185 190

Lys Ile Ile Val Ile Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala
 195 200 205

Gly Tyr Leu Met Ser Gly Asp Gly Val Tyr Ala Ser Asn Leu Asn Leu
 210 215 220

Ile Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile
 225 230 235 240

Ile Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 56

<211> 756

<212> DNA

<213> Marine eubacteria

<400> 56

| | |
|--------------------------------------------------------------------|-----|
| accatgggta aattattact gatatttagt agtgctattg cacttccatc atttgctgct | 60 |
| gctgggtggcg atctagatat aagtgatact gttgggtgtt cattctggct ggttacagct | 120 |
| ggtatgttag cgccaactgt attctttttt gtagaaagag accaagtca gctaaggtagg | 180 |
| aaaacttcac ttactgtatc tggtttaatt actggtagat ctttttggca ttatctctac | 240 |
| atgagaggtg tttggataga tactggtgat acaccaacag tattnagata tattgattgg | 300 |
| ttattaactg ttccattaca aatgggttag ttctatctaa ttcttgctgc ttgtacaagt | 360 |
| gttgctgctt cattatcaa gaagcttcta gctggttcat tagtaatgtt aggtgctgga | 420 |
| tttgcaggcg aagctggttt agctcctgta ttacctgctt tcattattgg tatggctgga | 480 |
| tggttataca tgatttatga gctacatatg ggtgaaggta aggctgctgt aagtactgca | 540 |
| agtcctgctg ttaactctgc atacaacgca atgatgaaga ttattgttat tggatggca | 600 |
| atttatcctg ctggatatgc tgctggttac ctaatgagtg gtgacggtgt atacgcttca | 660 |

02716.0005.NPUS01.ST25.txt

| | |
|-----------------------------------------------------------------|-----|
| aacttaaacc ttatatataa ccttgctgac tttgttaaca agattcatt tggttgatc | 720 |
| atttggaaatg ttgctgttaa agaatcttct aatgct | 756 |

<210> 57
<211> 252
<212> PRT
<213> Marine eubacteria

<400> 57

| | | | |
|-----------------------------------------------------------------|---|----|----|
| Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Ala Ile Ala Leu Pro | | | |
| 1 | 5 | 10 | 15 |

| | | |
|-----------------------------------------------------------------|----|----|
| Ser Phe Ala Ala Ala Gly Gly Asp Leu Asp Ile Ser Asp Thr Val Gly | | |
| 20 | 25 | 30 |

| | | |
|-----------------------------------------------------------------|----|----|
| Val Ser Phe Trp Leu Val Thr Ala Gly Met Leu Ala Ala Thr Val Phe | | |
| 35 | 40 | 45 |

| | | |
|-----------------------------------------------------------------|----|----|
| Phe Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu | | |
| 50 | 55 | 60 |

| | | | |
|-----------------------------------------------------------------|----|----|----|
| Thr Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr | | | |
| 65 | 70 | 75 | 80 |

| | | |
|-----------------------------------------------------------------|----|----|
| Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Arg | | |
| 85 | 90 | 95 |

| | | |
|-----------------------------------------------------------------|-----|-----|
| Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr | | |
| 100 | 105 | 110 |

| | | |
|-----------------------------------------------------------------|-----|-----|
| Leu Ile Leu Ala Ala Cys Thr Ser Val Ala Ala Ser Leu Phe Lys Lys | | |
| 115 | 120 | 125 |

| | | |
|-----------------------------------------------------------------|-----|-----|
| Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu | | |
| 130 | 135 | 140 |

| | | | |
|-----------------------------------------------------------------|-----|-----|-----|
| Ala Gly Leu Ala Pro Val Leu Pro Ala Phe Ile Ile Gly Met Ala Gly | | | |
| 145 | 150 | 155 | 160 |

| | | |
|-----------------------------------------------------------------|-----|-----|
| Trp Leu Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala | | |
| 165 | 170 | 175 |

| | | |
|-----------------------------------------------------------------|-----|-----|
| Val Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met | | |
| 180 | 185 | 190 |

| | | |
|-----------------------------------------------------------------|-----|-----|
| Met Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala | | |
| 195 | 200 | 205 |

02716.0005.NPUS01.ST25.txt

Gly Tyr Leu Met Gly Gly Glu Gly Val Tyr Ala Ser Asn Leu Asn Leu
210 215 220

Ile Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile
225 230 235 240

Ile Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 58
<211> 756
<212> DNA
<213> Marine eubacteria

<400> 58
accatgggta aattattact gatatttagt agtgctattg cacttccatc atttgctgct 60
gctgggtggcg atctagatat aagtgatact gttgggtttt cattctggct gttacagct 120
ggtatgttag cgccaactgt gttctttttt gtagaaagag accaagtcag cgctaagtgg 180
aaaacttac ttactgtatc tggtttaatt actggatag ctttttggca ttatctctat 240
atgagaggtg tttggataga tactggtgat accccaacag tattcagata tattgattgg 300
ttattaactg ttccattaca aatggtttag ttctatctaa ttcttgctgc ttgtacaagt 360
gttgcgtgctt cattattaa gaagcttcta gctggttcat tagtaatgtt aggtgctgga 420
tttgcaggcg aagctggatt agctcctgta ttacctgctt tcattattgg tatggctgga 480
tggctataca tgatttatga gctataatg ggtgaaggta aggctgctgt aagtactgca 540
agtcctgctg ttaactctgc atacaacgca atgatgatga ttattgttgc ttgatggca 600
atttatcctg ctggatatgc tgctggttac ctaatgggtg gcgaaggcgt atacgcttca 660
aacttaaacc ttatataaa ctttgctgac tttgttaaca agattctatt tggtttgatc 720
atttggaatg ttgctgttaa agaatcttct aatgct 756

<210> 59
<211> 250
<212> PRT
<213> Marine eubacteria

<400> 59

Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr
1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

02716.0005.NPUS01.ST25.txt

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
180 185 190

Ile Ile Ile Val Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
195 200 205

Tyr Leu Met Gly Asp Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
225 230 235 240

Asn Val Ala Val Lys Lys Ser Ser Asn Ala
245 250

<210> 60

<211> 751

<212> DNA

<213> Marine eubacteria

<400> 60

atgggttaat tattactgat attaggtagt gttatcgcbc ttccaacatt tgctgctggc 60

ggtggcgcatac ttgatgctag tgactacact ggtgtttcat tctggtagt tactgctgct 120

02716.0005.NPUS01.ST25.txt

| | | |
|---------------------------------------------------------|-------------|-----|
| ctattagcgt ctactgtatt cttctttgtt gaaagagata gagtgtctgc | aaaatggaaa | 180 |
| acttcattaa cagtatctgg tttagttact ggtattgctt tttggcatta | tatgtacatg | 240 |
| agaggtgtat ggatagaaac tggtgattcg cctactgtct ttagatacat | cgactggta | 300 |
| ttaactgtgc ctttactaat atgtgagttc tatctgatac ttgctgcagc | tactaatgtt | 360 |
| gctggttcat tatttaagaa attgctagtt gggtcttgc tgatgcttgt | gttggttac | 420 |
| atgggtgaag caggaataat ggcagcttgg cctgcattca tcattggatg | tttagcatgg | 480 |
| gtatatatga tttatgaact atggcgttgt gaaggaaaat ctgcatcaa | tactgcaagt | 540 |
| cctgctgtac agtcagctta caacacaatg atgtatatca tcatcgttgg | ttgggcaatt | 600 |
| tatcctgttag gttatttcac aggttaccta atgggtgacg gtggatcagc | tcttaatcta | 660 |
| aaccttattt ataacccttgc tgactttgtt aacaagattc tatttggttt | aatttatatgg | 720 |
| aatgttgctg ttaaaaaatc ttctaatgct a | | 751 |

<210> 61
<211> 250
<212> PRT
<213> Marine eubacteria

<400> 61

Met Gly Lys Leu Leu Leu Ile Leu Gly Asn Val Ile Ala Leu Pro Thr
1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

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Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
 130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
 145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
 165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
 180 185 190

Ile Ile Ile Val Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
 195 200 205

Tyr Leu Met Gly Asp Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
 210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
 225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 62
<211> 751
<212> DNA
<213> Marine eubacteria

| | |
|--------------------------------------------------------------------|-----|
| <400> 62 | |
| atgggtaaat tattactgtat attaggtaat gttatcgcc ttccaaacatt tgctgctggc | 60 |
| ggtggcgatc ttgatgctag tgactacact ggtgtttcat tctggtagt tactgctgct | 120 |
| ctattagcgt ctactgtatt cttctttgtt gaaagagata gagtgctgc aaaatggaaa | 180 |
| acttcattaa cagtatctgg tttagttact ggtattgctt tttggcatta tatgtacatg | 240 |
| agaggtgtat ggatagaaac tggtgattcg cctactgtct ttagatacat cgactggta | 300 |
| ttaactgtgc cttaactaat atgtgaggtc tatctgatac ttgctgcagc tactaatgtt | 360 |
| gctggttcat tatttaagaa attgctagtt ggttctttg tgatgcttgt gttcggttac | 420 |
| atgggtgaag caggaataat ggcagcttgg cctgcattca tcattgggtg tttagcatgg | 480 |
| gtatatatga tttatgagct atgggcttgt gaaggaaaat ctgcatgtaa tactgcaagt | 540 |
| cctgctgtac agtcagctt caacactatg atgtatatta tcattgttgg ttgggcgatt | 600 |
| tatcctgttag gctatttcac tggcaccc atgggtgacg gtggatcagc tcttaattta | 660 |
| aaccttattt ataaccttgc tgactttgtt aacaagattc tatttggttt aatttatatgg | 720 |
| aatgttgctg ttcaaagaatc ttctaatgct a | 751 |

02716.0005.NPUS01.ST25.txt

<210> 63
<211> 250
<212> PRT
<213> Marine eubacteria

<400> 63

Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr
1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Ser Ser Pro Thr Val Phe Arg Tyr
85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
180 185 190

Ile Ile Ile Ala Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
210 215 220

02716.0005.NPUS01.ST25.txt

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 64
<211> 751
<212> DNA
<213> Marine eubacteria

<400> 64
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ggtggcgatc ttgatgctag tgactacact ggtgttctt tctggtagt tactgctgct 120
ctattagcat ctactgtatt cttctttgtt gaaaggata gagtatctgc aaaaatggaaa 180
acttcattaa cagtatctgg tttagttact ggtattgctt tttggcatta tatgtacatg 240
agaggtgtat ggatagaaac tggtagttca cctactgtct ttagatacat tgaactggcta 300
ttaacagtgc cttaactaat atgtgagttc tatttaatac ttgccgcagc tactaatgtt 360
gctggttcat tatttaagaa attgcttagtt ggttcttttg tgatgcttgt gttggttac 420
atgggtgaag caggaataat ggcagcttgg cctgcattca tcattggatg tttagcatgg 480
gtatatatga tttatgagct atgggcttggt gaaggaaaat ctgcatgtaa tactgcaagt 540
cctgctgtac agtcagctta caacacaatg atgtatatac tcattgcgtgg ttggcaatt 600
tatcctgttag gttatttcac aggttaccta atgggtgacg gtggatcagc tcttaatcta 660
aaccttattt ataaccttgc tgactttgtt aacaagattc tatttggttt aatttatatgg 720
aatgttgctg ttaaagaatc ttctaatgtc a 751

<210> 65
<211> 250
<212> PRT
<213> Marine eubacteria

<400> 65

Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr
1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
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50

55

60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
 65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
 85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
 100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
 115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
 130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
 145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
 165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
 180 185 190

Ile Ile Ile Val Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
 195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
 210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
 225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 66

<211> 751

<212> DNA

<213> Marine eubacteria

<400> 66

atgggttaat tattactgat attaggtagt gttatcgcbc ttccaacatt tgctgctggc 60

ggtggcgcata ttgatgctag tgactacact ggtgtttcat tctggtagt tactgctgct 120

ctattagcgt ctactgtatt cttctttgtt gaaagagata gagtgctgc aaaatggaaa 180

02716.0005.NPUS01.ST25.txt

| | | | |
|------------------------|----------------------------------|-----------------------|-----|
| acttcattaa cagtatctgg | tttagttaact ggtattgctt | tttggcatta tatgtacatg | 240 |
| agaggtgtat ggatagaaac | tggtgattcg cctactgtct | ttagatacat cgactggta | 300 |
| ttaactgtgc cttaactaat | atgtgaggttc tatactgatac | ttgctgcagc tactaatgtt | 360 |
| gctggttcat tatttaagaa | attgcttagtt ggttcttgc tgatgcttgt | gttggttac | 420 |
| atgggtgaag caggaataat | ggcagcttgg cctgcattca | tcattggatg tttagcatgg | 480 |
| gtatatatga tttatgaact | atgggcttgtt gaaggaaaat | ctgcatgcaa tactgcaagt | 540 |
| cctgctgtac agtcagctta | caacacaatg atgtatatca | tcatcgttgg ttggcaatt | 600 |
| tatcctgttag gttatttcac | aggttaccta atgggtgacg | gtggatcagc tcttaatcta | 660 |
| aaccttattt ataaccttgc | tgactttgtt aacaagattc | tatgggttt aatttatatgg | 720 |
| aatgttgctg ttaaagaatc | ttctaattgtc a | | 751 |

<210> 67

<211> 250

<212> PRT

<213> Marine eubacteria

<400> 67

Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr
 1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
 20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
 35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
 50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
 65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Ser Ser Pro Thr Val Phe Arg Tyr
 85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
 100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
 115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
 130 135 140

02716.0005.NPUS01.ST25.txt

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
145 150 155 160

val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
180 185 190

Ile Ile Ile Ala Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Asn Tyr
210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 68

<211> 751

<212> DNA

<213> Marine eubacteria

<400> 68

| | | | | | | |
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| atgggttaat | tattactgat | attaggtat | gttatcgatc | ttccaaacatt | tgctgctggc | 60 |
| ggtggcgatc | ttgatgctag | tgactacact | ggtgtttcat | tctggtagt | tactgctgct | 120 |
| ctattagcgt | ctactgtatt | cttctttgtt | gaaagagata | gagtgtctgc | aaaatggaaa | 180 |
| acttcattaa | cagtatctgg | tttagttact | ggtattgctt | tttggcatta | tatgtacatg | 240 |
| agaggtgtat | ggatagaaac | tggttagttca | cctactgtct | ttagatacat | tgactggcta | 300 |
| ttaacagtgc | ctttactaat | atgtgaggtc | tatttaatac | ttgccgcagc | tactaatgtt | 360 |
| gctggttcat | tatttaagaa | attgctagtt | ggttctcttg | ttatgcttgt | gttcggttac | 420 |
| atgggtgaag | caggaataat | ggcagcttgg | cctgcattca | tcattgggtg | tttagcatgg | 480 |
| gtatatatga | tttatgagct | atgggctgg | gaaggaaaat | ctgcatgtaa | tactgcaagt | 540 |
| cctgctgtac | agtcaagctta | caacacaatg | atgtatatca | tcatcgtgg | ttgggcaatt | 600 |
| tatcctgtag | gttatttcac | aggtaaccta | atgggtgacg | gtggatcagc | tcttaatcta | 660 |
| aaccttaatt | ataaccttgc | tgactttgtt | aacaagattc | tatttgggtt | aatttatatgg | 720 |
| aatgttgctg | ttaaagaatc | ttctaatgct | a | | | 751 |

<210> 69

02716.0005.NPUS01.ST25.txt

<211> 250

<212> PRT

<213> Marine eubacteria

<400> 69

Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr
1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
180 185 190

Ile Ile Ile Val Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
Page 58

225

230

235

240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 70
 <211> 751
 <212> DNA
 <213> Marine eubacteria

<400> 70
 atgggtaaat tattactgat attaggtagt gttatcgcbc ttccaacatt tgctgctggc 60
 ggtggcgatc ttgatgctag tgactatact ggtgttcat tctggtagt tactgctgct 120
 ctattagcgt ctactgtatt cttctttgtt gaaagagata gagtgctgc aaaatggaaa 180
 acttcattaa cagtatctgg tttagttact ggtattgctt tttggcatta tatgtacatg 240
 agaggtgtat ggatagaaac tggtgattcg cctactgtct ttagatacat agactggta 300
 ttaactgtgc cttaactaat atgtgagttc tatctgatac ttgctgcagc tactaatgtt 360
 gctggttcat tatttaagaa attgctagtt ggtctcttg tgatgcttgt gttggttac 420
 atgggtgaag caggaataat ggcagcttgg cctgcattca tcattggatg ttttagcatgg 480
 gtatatatga tttatgaact atgggcttgtt gaaggaaaat ctgcatgcaa tactgcaagt 540
 cctgctgtac aatcagctt caacacaatg atgtatatac tcatcgttgg ttggcaatt 600
 tatcctgttag gttatttcac aggttaccta atgggtgacg gtggatcagc tcttaatcta 660
 aaccttattt ataaccttgc tgactttgtt aacaagattc tatttggttt aattatatgg 720
 aatgttgctg ttaaagaatc ttctaattgt a 751

<210> 71
 <211> 250
 <212> PRT
 <213> Marine eubacteria

<400> 71

Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr
 1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
 20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
 35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
 50 55 60

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Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
 65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Ser Ser Pro Thr Val Phe Arg Tyr
 85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
 100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
 115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
 130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
 145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
 165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
 180 185 190

Ile Ile Ile Val Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
 195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
 210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
 225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 72

<211> 751

<212> DNA

<213> Marine eubacteria

<400> 72

atgggttaat tattactgat attaggtat gttattgcgc ttccaacatt tgccgctggc 60

ggtggcgatc ttgatgctag tgactacact ggtgtttctt tctggtagt tactgctgct 120

ctattagcat ctactgtatt cttctttgtt gaaaggata gagtatctgc aaaatggaaa 180

acttcattaa cagtatctgg tttagttact ggtattgctt tttggcatta tatgtacatg 240

agaggtgtat ggatagaaac tggtagttca cctactgtct ttagatacat tgactggcta 300

02716.0005.NPUS01.ST25.txt

| | | | | | | |
|------------|------------|-------------|------------|------------|------------|-----|
| ttaacagtgc | ctttactaat | atgtgagttc | tatttaatac | ttgccgcagc | tactaatgtt | 360 |
| gctggttcat | tatttaagaa | attgcttagtt | ggttctcttg | ttatgcttgt | gttcggttac | 420 |
| atgggtgaag | caggaataat | ggcagcttgg | cctgcattca | tcattggatg | tttagcatgg | 480 |
| gtatatatga | tttatgaact | atgggcttgt | gaaggaaaat | ctgcatgcaa | tactgcaagt | 540 |
| cctgctgtac | agttagctta | caacacaatg | atgtatatca | tcatcgttgg | ttggcaatt | 600 |
| tatcctgtac | gttatttcac | aggtagctta | atgggtgacg | gtggatcagc | tcttaatcta | 660 |
| aaccttattt | ataaccttgc | tgactttgtt | aacaagattc | tatgggttt | aattatatgg | 720 |
| aatgttgctg | ttaaagaatc | ttctaatgct | a | | | 751 |

<210> 73

<211> 250

<212> PRT

<213> Marine eubacteria

<400> 73

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Gly | Lys | Leu | Leu | Leu | Ile | Leu | Gly | Ser | Val | Ile | Ala | Leu | Pro | Thr |
| 1 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 15 | |
| | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Ala | Ala | Gly | Gly | Gly | Asp | Leu | Asp | Ala | Ser | Asp | Tyr | Thr | Gly | Val |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 30 | |
| | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Phe | Trp | Leu | Val | Thr | Ala | Ala | Leu | Leu | Ala | Ser | Thr | Val | Phe | Phe |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 45 | |
| | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Val | Glu | Arg | Asp | Arg | Val | Ser | Ala | Lys | Trp | Lys | Thr | Ser | Leu | Thr |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 60 | |
| | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Ser | Gly | Leu | Val | Thr | Gly | Ile | Ala | Phe | Trp | His | Tyr | Met | Tyr | Met |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 80 | |
| | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Gly | Val | Trp | Ile | Glu | Thr | Gly | Asp | Ser | Pro | Thr | Val | Phe | Arg | Tyr |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 95 | |
| | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Asp | Trp | Leu | Leu | Thr | Val | Pro | Leu | Leu | Ile | Cys | Glu | Phe | Tyr | Leu |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 110 | |
| | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Leu | Ala | Ala | Ala | Thr | Asn | Val | Ala | Gly | Ser | Leu | Phe | Lys | Lys | Leu |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 125 | |
| | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Val | Gly | Ser | Leu | Val | Met | Leu | Val | Phe | Gly | Tyr | Met | Gly | Glu | Ala |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 140 | |
| | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Ile | Met | Ala | Ala | Trp | Pro | Ala | Phe | Ile | Ile | Gly | Cys | Leu | Ala | Trp |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 160 | |
| | | | | | | | | | | | | | | | |

02716.0005.NPUS01.ST25.txt

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
180 185 190

Ile Ile Ile Phe Gly Trp Ala Ile Tyr Leu Val Gly Tyr Phe Thr Gly
195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 74

<211> 751

<212> DNA

<213> Marine eubacteria

<400> 74

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ctattagcat ctactgtatt tttctttgtt gaaagagaca gagtttctgc taaatggaaa 180
acatcattaa cagtatctgg tttagttact ggtattgctt tttggcatta catgtacatg 240
agaggtgtat ggattgaaac tggtgattca ccaactgttt ttagatacat cgactggttg 300
ctaactgtgc cttaactaat ttgtgaggttc tacttaatac tagcagcagc tactaacgtt 360
gctggttctt tattcaagaa attactagtt ggttctcttg ttatgcttgt gttggttac 420
atgggtgaag caggaattat ggcagcctgg cctgcattca ttataggatg ttttagcatgg 480
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cctgcagttc agtcagctta caacacaatg atgtatatca tcattttgg ttgggctatt 600
tacctttagt gttatttcac tggttaccta atgggtgacg gtggatcagc tcttaactta 660
aaccttatct ataaccttgc tgactttgtt aacaagattc tatttggttt aatttatatgg 720
aatgttgctg ttaaagaatc ttctaatgct a 751

<210> 75

<211> 250

<212> PRT

<213> Marine eubacteria

02716.0005.NPUS01.ST25.txt

<400> 75

Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr
1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Ser Ser Pro Thr Val Phe Arg Tyr
85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
180 185 190

Ile Ile Ile Ala Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
225 230 235 240

02716.0005.NPUS01.ST25.txt

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 76
 <211> 751
 <212> DNA
 <213> Marine eubacteria

<400> 76
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 ctattagcat ctactgtatt cttcttgtt gaaaggata gagtatctgc aaaatggaaa 180
 acttcattaa cagtatctgg tttagttact ggtattgctt tttggcatta tatgtacatg 240
 agaggtgtat ggatagaaac tggtagttca cctactgtct ttagatacat tgaactggcta 300
 ttaacagtgc cttactaat atgtgagttc tatttaatac ttgccgcagc tactaatgtt 360
 gctggttcat tatttaagaa attgcttagtt gggtctcttg ttatgcttgt gttcggttac 420
 atgggtgaag caggaataat ggcagcttgg cctgcattca tcattgggtg tttagcatgg 480
 gtatatatga tttatgagct atgggctggt gaaggaaaat ctgcattgtaa tactgcaagt 540
 cctgctgtac agtcagctta caacacaatg atgtatatac tcattgcgtgg ttggcaatt 600
 tattctgttag gttatccac aggttaccta atgggtgacg gtggatcagc tcttaatcta 660
 aaccttattt ataaccttgc tgactttgtt aacaagattc tatttggttt aattatatgg 720
 aatgttgctg ttaagaatc ttctaatgct a 751

<210> 77
 <211> 250
 <212> PRT
 <213> Marine eubacteria

<400> 77

Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr
 1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
 20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
 35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
 50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
 65 70 75 80

02716.0005.NPUS01.ST25.txt

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
 85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
 100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
 115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
 130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
 145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
 165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
 180 185 190

Ile Ile Ile Val Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
 195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
 210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
 225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 78

<211> 751

<212> DNA

<213> Marine eubacteria

<400> 78

atgggttaat tattactgat attaggtgt gttatcgcbc ttccaaacatt tgctgctggc 60

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ctattagcgt ctactgtatt cttctttgtt gaaagagata gagtgctgc aaaatggaaa 180

acttcattaa cagtatctgg tttagttact ggtattgctt tttggcatta tatgtacatg 240

agaggtgtat ggatagaaac tggtgattcg cctactgtct ttagatacat cgactggta 300

ttaactgtgc cttaactaat atgtgagttc tatctgatac ttgctgcagc tactaatgtt 360

02716.0005.NPUS01.ST25.txt

| | |
|--------------------------------------------------------------------|-----|
| gctggttcat tatttaagaa attgctagtt ggttctcttg tgatgcttgt gtttggttac | 420 |
| atgggtgaag caggaataat ggcagcttgg cctgcattca tcattggatg ttttagcatgg | 480 |
| gtatatatga tttatgaact atgggcttgtt gaaggaaaat ctgcatgcaa tactgcaagt | 540 |
| cctgctgtac agtcagctta caacacaatg atgtatatca tcatcggttgg ttggcaatt | 600 |
| tatcctgttag gttatccac aggttaccta atgggtgacg gtggatcagc tcttaatcta | 660 |
| aaccttattt ataaccttgc tgactttgtt aacaagattc tatttggttt aattatatgg | 720 |
| aatgttgctg tttaagaatc ttctaatgct a | 751 |

<210> 79

<211> 250

<212> PRT

<213> Marine eubacteria

<400> 79

| | | | |
|-----------------------------------------------------------------|---|----|----|
| Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr | | | |
| 1 | 5 | 10 | 15 |

| | | |
|-------------------------------------------------------------|----|----|
| Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val | | |
| 20 | 25 | 30 |

| | | |
|-----------------------------------------------------------------|----|----|
| Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe | | |
| 35 | 40 | 45 |

| | | |
|-----------------------------------------------------------------|----|----|
| Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Ala | | |
| 50 | 55 | 60 |

| | | | |
|-----------------------------------------------------------------|----|----|----|
| Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Cys Met Tyr Met | | | |
| 65 | 70 | 75 | 80 |

| | | |
|-----------------------------------------------------------------|----|----|
| Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr | | |
| 85 | 90 | 95 |

| | | |
|-----------------------------------------------------------------|-----|-----|
| Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu | | |
| 100 | 105 | 110 |

| | | |
|-----------------------------------------------------------------|-----|-----|
| Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu | | |
| 115 | 120 | 125 |

| | | |
|-----------------------------------------------------------------|-----|-----|
| Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala | | |
| 130 | 135 | 140 |

| | | | |
|-----------------------------------------------------------------|-----|-----|-----|
| Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp | | | |
| 145 | 150 | 155 | 160 |

| | |
|-----------------------------------------------------------------|--|
| Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys | |
| Page 66 | |

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
 180 185 190

Ile Ile Val Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
 195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
 210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
 225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 80
<211> 750
<212> DNA
<213> Marine eubacteria

<400> 80
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ttattagcat ctactgtatt tttctttgtt gaaagagata gagttctgc aaaatggaaa 180
acatcattag ctgtatctgg tcttattact ggtattgcgt tctggcattg catgtacatg 240
agaggggtat ggattgaaac tggtgattcg ccaactgtat ttagatacat tgattggta 300
ctaacagttc ctctattaat atgtgaattc tacttaattc ttgctgctgc aactaatgtt 360
gctggatcat tatttaagaa attactagtt ggttctcttg ttatgcttgt gtttggttac 420
atgggtgaag caggaatcat ggctgcatgg cctgcattca ttattgggtg tttagcttgg 480
gtatacatga tttatgaatt atgggctgga gaaggaaaat ctgcatgtaa tactgcaagt 540
cctgctgtgc aatcagctta caacacaatg atgtatatta tcgtcttgg ttggcgatt 600
tatcctgttag gttatccac aggttacctg atgggtgacg gtggatcagc tcttaactta 660
aaccttatct ataaccttgc tgactttgtt aacaagattc tatttggttt aattatatgg 720
aatgttgctg ttaaagaatc ttctaatgct 750

<210> 81
<211> 250
<212> PRT
<213> Marine eubacteria

<400> 81

02716.0005.NPUS01.ST25.txt

Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr
 1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
 20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Ser
 35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
 50 55 60

Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
 65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
 85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
 100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
 115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
 130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
 145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
 165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
 180 185 190

Ile Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
 195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
 210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
 225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

02716.0005.NPUS01.ST25.txt

<210> 82
<211> 750
<212> DNA
<213> Marine eubacteria

<400> 82
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ttattagcat ctactgtatt ttccttgtt gaaagagata gagttctgc aaaatggaaa 180
acatcattaa ctgtatctgg tcatttact ggtattgctt tctggcatta catgtacatg 240
agaggggtat ggattgaaac tggtgattcg ccaactgtat ttagatacat tgattggta 300
ctaacagttc ctctattaa atgtgaattc tacttaattc ttgctgctgc aactaatgtt 360
gctggatcat tatttaagaa attactagtt ggttctcttg ttatgcttgt gttggttac 420
atgggtgaag caggaatcat ggctgcatgg cctgcattca ttattgggtg tttagcttgg 480
gtatacatga tttatgaatt atgggctgga gaaggaaat ctgcatgtaa tactgcaagt 540
cctgctgtag aatcagctt caacacaatg atgtatatta tcattttgg ttggcgatt 600
tatccctgtag gttatcac aggttacctg atgggtgacg gtggatcagc tcttaactta 660
aaccttacatc ataaccttgc tgactttgtt aacaagattc tatttgggtt aattatatgg 720
aatgttgctg ttaaagaatc ttctaatgct 750

<210> 83
<211> 250
<212> PRT
<213> Marine eubacteria

<400> 83

Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr
1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
85 90 95

02716.0005.NPUS01.ST25.txt

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala.
130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
180 185 190

Ile Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Ser Ile Ile Trp
225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 84
<211> 750
<212> DNA
<213> Marine eubacteria

<400> 84
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ggtgtgacc ttgatgctag tgattacact ggtgttctt tttggtagt tactgctgct 120
ttattagcat ctactgtatt tttctttgtt gaaagagata gagtttctgc aaaatggaaa 180
acatcattaa ctgtatctgg tcttattact ggtattgctt tctggcatta catgtacatg 240
agaggggtat ggattgaaac tggtgattcg ccaaccgtat ttagatacat tgattggta 300
ctaacagttc ctctattaat atgtgaattc tacttaattc ttgctgctgc aactaatgtt 360
gctggatcat tatttaagaa attactagtt ggttctcttg ttatgcttgt gtttggttac 420
atgggtgaag caggaatcat ggctgcatgg cctgcattca ttattgggtg tttagcttgg 480

02716.0005.NPUS01.ST25.txt

gtatacatga tttatgaatt atgggctgga gaaggaaaat ctgcgttta tactgcaagt 540
cctgctgtgc aatcagctta caacacaatg atgtatatta tcatcttgg ttgggcgatt 600
tatccctgttag gttatccac aggttacctg atgggtgacg gtggatcagc acttaactta 660
aaccttatct ataaccttgc tgactttgtt aacaagattc tatgggttc aattatatgg 720
aatgttgctg ttaaagaatc ttctaatgct 750

<210> 85

<211> 250

<212> PRT

<213> Marine eubacteria

<400> 85

Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr
1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
165 170 175

02716.0005.NPUS01.ST25.txt

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
 180 185 190

Ile Ile Ile Val Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
 195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
 210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
 225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 86
 <211> 751
 <212> DNA
 <213> Marine eubacteria

<400> 86
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 ggtggtgacc ttgatgctag tgattacact ggtgttctt tttggtagt tactgctgct 120
 ttattagcgt ctactgtatt cttcttgtt gaaagagata gagtgtctgc aaaatggaaa 180
 acttcattaa cagtatctgg tttagttact ggtattgctt tttggcatta tatgtacatg 240
 agaggtgtat ggatagaaac tggtgattcg cctactgtct ttagatacat cgactggta 300
 ttaactgtgc cttactaat atgtgagttc tatctgatac ttgctgcagc tactaatgtt 360
 gctggttcat tatttaagaa attgctagtt ggttctctt tgatgcttgc gtttggttac 420
 atgggtgaag caggaataat ggcagcttgg cctgcattca tcattgggtg tttagcatgg 480
 gtatatatga tttatgaact atgggctgg gaaggaaaat ctgcatgcaa tactgcaagt 540
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 tattcctgtac gttatccac aggttaccta atgggtgacg gtggatcagc tcttaatcta 660
 aaccttatct ataaccttgc tgactttgtt aacaagattc tatttggttt aattatatgg 720
 aatgttgctg ttaaagaatc ttctaatgtc a 751

<210> 87
 <211> 250
 <212> PRT
 <213> Marine eubacteria

<400> 87

Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr
 1 5 10 15

02716.0005.NPUS01.ST25.txt

Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
180 185 190

Ile Ile Ile Val Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 88
<211> 751

02716.0005.NPUS01.ST25.txt

<212> DNA
 <213> Marine eubacteria

<400> 88
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 ggtggcgatc ttgatgctag tgactatact ggtgtttcat tctggtagt tactgctgct 120
 ctattagcgt ctactgtatt cttctttgtt gaaagagata gagtgctgc aaaatggaaa 180
 acttcattaa cagtatctgg tttagttact ggtattgctt tttggcatta tatgtacatg 240
 agagggttat ggtatgaaac tggtgattcg cctactgtct ttagatacat cgactggta 300
 ttaactgtgc cttaactaat atgtgagttc tatactgatac ttgctgcagc tactaatgtt 360
 gctggttcat tatttaagaa attgctagtt gggtctcttg tgatgcttgt gttggttac 420
 atgggtgaag caggaataat ggcagcttgg cctgcattca tcattggatg ttttagcatgg 480
 gtatatatga tttatgaact atgggcttgtt gaaggaaaat ctgcatgcaa tactgcaagt 540
 cctgctgtac agtcagctta caacacaatg atgtatataca tcatcgttgg ttggcaatt 600
 tattcctgttag gctatttcac aggttaccta atgggtgacg gtggatcagc tcttaatcta 660
 aaccttattt ataaccttgc tgactttgtt aacaagattc tatttggttt aatttatatgg 720
 aatgttgctg ttaaagaatc ttctaatgct a 751

<210> 89
 <211> 250
 <212> PRT
 <213> Marine eubacteria

<400> 89

Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr
 1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
 20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
 35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
 50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
 65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
 85 90 95

Ile Asp Trp Leu Leu Pro Val Pro Leu Ala Ile Cys Glu Phe Tyr Leu
 Page 74

02716.0005.NPUS01.ST25.txt
 100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
 115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
 130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
 145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
 165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
 180 185 190

Ile Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
 195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
 210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
 225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 90
 <211> 751
 <212> DNA
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| ggtggtgacc ttgatgctag tgattacact ggtgttctt tttggtagt tactgctgct | 120 |
| ttattagcat ctactgtatt tttctttgtt gaaagagata gagttctgc aaaatggaaa | 180 |
| acatcattaa ctgtatctgg tcttgtact ggtattgctt tctggcatta catgtacatg | 240 |
| agaggggtat ggattgaaac tggtgattcg ccaactgtat ttagatacat tgattggta | 300 |
| ctaccagttc ctctagcaat atgtgaattc tacttaattc ttgctgctgc aactaatgtt | 360 |
| gctggatcat tatttaagaa attactagtt ggttctcttg ttatgcttgc gtttggttac | 420 |
| atgggtgaag caggaatcat ggctgcatgg cctgcattca ttattgggtg tttagcttgg | 480 |
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| tatcctgttag gttatccac aggttaccctg atgggtgacg gtggatcagc tcttaactta | 660 |
| aaccttatct ataaccttgc tgactttgtt aacaagattc tatgggttt aattatatgg | 720 |
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<210> 91
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<400> 91

Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr
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Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
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Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
180 185 190

02716.0005.NPUS01.ST25.txt

Ile Ile Ile Phe Gly Trp Ala Ile Tyr Leu Val Gly Tyr Phe Thr Gly
195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 92

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<212> DNA

<213> Marine eubacteria

<400> 92

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acatcattaa cagtatctgg tttagttact ggtattgctt tttggcatta catgtacatg 240
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gtatacatga tttatgaatt atgggctgga gaaggaaagt ctgcatgtaa cactgcaagt 540
cctgcagttc agtcagctta caacacaatg atgtatatca tcatacttgg ttggctatt 600
tacctttagt gttatttcac tggttaccta atgggtgacg gtggatcagc tcttaactta 660
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<211> 250

<212> PRT

<213> Marine eubacteria

<400> 93

Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr
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Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Ser Ser Pro Thr Val Phe Arg Tyr
85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
180 185 190

Ile Ile Ile Phe Gly Trp Ala Ile Tyr Leu Val Gly Tyr Phe Thr Gly
195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
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agaggtgtat ggatagaaac tggtagttca cctactgtct ttagatacat tgaactggcta 300
ttaacagtgc cttactaat atgtgagttc tatttaatac ttgccgcagc tactaatgtt 360
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cctgcagttc agtcagctta caacacaatg atgtatatac tcattttgg ttgggctatt 600
tacctttagt gttatcac tggttacca atgggtgacg gtggatcagc tcttaactta 660
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<210> 95

<211> 250

<212> PRT

<213> Marine eubacteria

<400> 95

Met Gly Lys Leu Leu Leu Arg Leu Gly Ser Val Ile Ala Leu Pro Thr
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Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
100 105 110

02716.0005.NPUS01.ST25.txt

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
 115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
 130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
 145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
 165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
 180 185 190

Ile Ile Ile Val Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
 195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
 210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
 225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
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<210> 96

<211> 751

<212> DNA

<213> Marine eubacteria

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ctattagcgt ctactgtatt cttctttgtt gaaagagata gagtgctgc aaaatggaaa 180

acttcattaa cagtatctgg tttagttact ggtattgctt tttggcatta tatgtacatg 240

agaggtgtat ggatagaaac tggtgattcg cctactgtct ttagatacat cgactggta 300

ttaactgtgc cttaactaat atgtgagttc tatctgatac ttgctgcagc tactaatgtt 360

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02716.0005.NPUS01.ST25.txt

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aatgttgctg tttaagaatc ttctaatgct a 751

<210> 97
<211> 250
<212> PRT
<213> Marine eubacteria

<400> 97

Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr
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Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Ala
50 55 60

Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
180 185 190

Ile Ile Ile Val Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
195 200 205

02716.0005.NPUS01.ST25.txt

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 98
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ttattagcat ctactgtatt tttctttgtt gaaagagata gagtttctgc aaaatggaaa 180
acatcattag ctgttatctgg tcatttactt ggtattgcgt tctggcatta catgtacatg 240
agaggggtat ggattgaaac tggtgattcg ccaactgtat tttagatacat tgattggta 300
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gctggatcat tatttaagaa attactagtt ggttctcttg ttatgcttgt gtttggttac 420
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tatcctgttag gttatttcac aggttaccta atgggtgacg gtggatcagc tcttaatcta 660
aaccttattt ataaccttgc tgactttgtt aacaagattc tatttggttt aattataatgg 720
aatgttgctg ttaaagaatc ttctaatgct a 751

<210> 99
<211> 250
<212> PRT
<213> Marine eubacteria
<400> 99

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Phe Ala Ala Gly Gly Asp Pro Asp Ala Ser Asp Tyr Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
Page 82

35

40

45

Phe Val Glu Arg Asp Arg Val Ser Ala Glu Trp Lys Thr Ser Leu Thr
 50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
 65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
 85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Glu Ile Cys Glu Phe Tyr Leu
 100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
 115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
 130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
 145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
 165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
 180 185 190

Ile Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
 195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
 210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Ile Gly Leu Ile Ile Trp
 225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 100

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<212> DNA

<213> Marine eubacteria

<400> 100

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| ttattagcat | ctactgtatt | tttcttgc | gaaagagata | gagtttctgc | agaatggaaa | 180 |
| acatcattaa | ctgtatctgg | tcttgc | tact gctt | tctggcatta | catgtacatg | 240 |
| agagggtat | ggattgaaac | tggtgattcg | ccaactgtat | ttagatacat | tgattggta | 300 |
| ctaacagttc | ctctagaaat | atgtgaattc | tacttaattc | ttgctgc | aactaatg | 360 |
| gctggatcat | tatttaagaa | attactagtt | ggttcttc | ttatgcttgc | gtttggttac | 420 |
| atgggtgaag | caggaatcat | ggctgc | cattca | ttattgggtg | tttagctgg | 480 |
| gtatacatga | tttatgaatt | atgggctgga | gaaggaaaat | ctgcatgtaa | tactgcaagt | 540 |
| cctgctgtgc | aatcagctta | caacacaatg | atgtatatta | tcatcttgc | ttgggcgatt | 600 |
| tatcctgttag | gttatttcac | aggtaac | atgggtgacg | gtggatc | gc tcttaactta | 660 |
| aaccttatct | ataacctgc | tgactttgtt | aacaagattc | taattgg | ttt aattatatgg | 720 |
| aatgttgctg | ttaaagaatc | ttcta | atgct | a | | 751 |

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<211> 250

<212> PRT

<213> Marine eubacteria

<400> 101

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 20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
 35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
 50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
 65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
 85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Val Ile Cys Glu Phe Tyr Leu
 100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
 115 120 125

02716.0005.NPUS01.ST25.txt

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
180 185 190

Ile Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
195 200 205

Tyr Leu Met Gly Asp Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 102

<211> 751

<212> DNA

<213> Marine eubacteria

<400> 102

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| ggtggtgacc | ttgatgctag | tgattacact | ggtgtttctt | tttggtagt | tactgctgct | 120 |
| ttattagcat | ctactgtatt | tttctttgtt | gaaagagata | gagttctgc | aaaatggaaa | 180 |
| acatcattaa | ctgtatctgg | tcttgtaact | ggtattgctt | tctggcatta | catgtacatg | 240 |
| agaggggtat | ggattgaaac | tggtgattcg | ccaaactgtat | ttagatacat | tgattggta | 300 |
| ctaacagttc | ctctagtaat | atgtgaattc | tacttaattc | ttgctgctgc | aactaatgtt | 360 |
| gctggatcat | tatttaagaa | attactagtt | ggttctcttg | ttatgcttgt | gttgggttac | 420 |
| atgggtgaag | caggaatcat | ggctgcatgg | cctgcattca | ttattgggtg | tttagcttgg | 480 |
| gtatacatga | tttatgaatt | atgggctgga | gaaggaaaat | ctgcatgtaa | tactgcaagt | 540 |
| cctgctgtgc | aatcagctta | caacacgatg | atgtatatta | tcatcttgg | ttgggcgatt | 600 |
| tatcctgttag | gttatttcac | agttacctg | atgggtgacg | gtggatcagc | tcttaactta | 660 |
| aaccttatct | ataaccttgc | tgactttgtt | aacaagattc | tatgggttt | aattatatgg | 720 |

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<210> 103

<211> 250

<212> PRT

<213> Marine eubacteria

<400> 103

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| Met | Gly | Lys | Leu | Leu | Leu | Ile | Leu | Gly | Ser | Val | Ile | Ala | Leu | Pro | Thr |
| 1 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 15 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Ala | Ala | Gly | Gly | Gly | Asp | Leu | Asp | Ala | Ser | Asp | Tyr | Thr | Gly | Val |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 30 | |
| 20 | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Phe | Trp | Leu | Val | Thr | Ala | Ala | Leu | Leu | Ala | Ser | Thr | Val | Phe | Phe |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 45 | |
| 35 | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Val | Glu | Arg | Asp | Arg | Val | Ser | Ala | Lys | Trp | Lys | Thr | Ser | Leu | Thr |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 60 | |
| 50 | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Pro | Gly | Leu | Ile | Thr | Asp | Ile | Ala | Phe | Trp | His | Tyr | Met | Tyr | Met |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 80 | |
| 65 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Gly | Val | Trp | Ile | Glu | Thr | Gly | Asp | Ser | Pro | Thr | Val | Phe | Arg | Tyr |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 95 | |
| 85 | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Asp | Trp | Leu | Leu | Thr | Val | Pro | Leu | Gln | Ile | Cys | Glu | Phe | Tyr | Leu |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 110 | |
| 100 | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Leu | Ala | Ala | Ala | Thr | Asn | Val | Ala | Gly | Ser | Leu | Phe | Lys | Lys | Leu |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 125 | |
| 115 | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Val | Gly | Ser | Leu | Val | Met | Leu | Val | Phe | Gly | Tyr | Met | Gly | Glu | Ala |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 140 | |
| 130 | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Ile | Met | Ala | Ala | Trp | Pro | Ala | Phe | Ile | Ile | Gly | Cys | Leu | Ala | Trp |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 160 | |
| 145 | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Tyr | Met | Ile | Tyr | Glu | Leu | Trp | Ala | Gly | Glu | Gly | Lys | Ser | Ala | Cys |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 175 | |
| 165 | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Thr | Ala | Ser | Pro | Ala | Val | Gln | Ser | Ala | Tyr | Asn | Thr | Met | Met | Tyr |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 190 | |
| 180 | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Ile | Ile | Phe | Gly | Trp | Ala | Ile | Tyr | Pro | Val | Gly | Tyr | Phe | Thr | Gly |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | 205 | |
| 195 | | | | | | | | | | | | | | | |

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
 Page 86

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210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 104
<211> 751
<212> DNA
<213> Marine eubacteria

<400> 104
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ttattagcat ctactgtatt tttctttgtt gaaagagata gagtttctgc aaaatggaaa 180
acatcattaa ctgtacctgg tcatttattact gatattgctt tctggcatta catgtacatg 240
agaggggtat ggattgaaac tggtgattcg ccaactgtat tttagatacat tgattggta 300
ctaacagttc ctctacaaat atgtgaattc tacttaattc ttgctgctgc aactaatgtt 360
gctggatcat tatttaagaa attactagtt ggttctcttg ttatgcttgc gtttggttac 420
atgggtgaag caggaatcat ggctgcatgg cctgcattca ttattgggtg tttagcttgg 480
gtatacatga tttatgaatt atgggctgga gaaggaaat ctgcatgtaa tactgcfgat 540
cctgctgtgc aatcagctta caacacaatg atgtatatta tcattttgg ttgggcgatt 600
tatcctgttag gttatttcac aggttacctg atgggtgacg gtggatcagc tcttaactta 660
aaccttatct ataaccttgc tgactttgtt aacaagattc tatttggttt aattatatgg 720
aatgttgctg ttaaagaatc ttctaatgct a 751

<210> 105
<211> 249
<212> PRT
<213> Marine eubacteria

<400> 105

Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr
1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

02716.0005.NPUS01.ST25.txt

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
 50 55 60

Val Pro Gly Leu Ile Thr Asp Ile Ala Phe Trp His Tyr Met Tyr Met
 65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
 85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Ile Cys Glu Phe Tyr Leu
 100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
 115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
 130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
 145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
 165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
 180 185 190

Ile Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
 195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
 210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
 225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn
 245

<210> 106

<211> 748

<212> DNA

<213> Marine eubacteria

<400> 106

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ggtggtgacc ttgatgctag tgattacact ggtgtttctt tttggtagt tactgctgct 120

ttattagcat ctactgtatt tttctttgtt gaaagagata gagttctgc aaaatggaaa 180

02716.0005.NPUS01.ST25.txt

| | |
|-------------------------------------------------------------------|-----|
| acatcattaa ctgtacctgg tcttattact gatattgctt tctggcatta catgtacatg | 240 |
| agaggggtat ggattgaaac tggtgattcg ccaactgtat ttagatacat tgattggta | 300 |
| ctaacagttc ctctacaat atgtgaattc tacttaattc ttgctgctgc aactaatgtt | 360 |
| gctggatcat tatttaagaa attactagtt ggttctcttg ttatgcttgt gtttggttac | 420 |
| atgggtgaag caggaatcat ggctgcatgg cctgcattca ttatgggtg ttagcttgg | 480 |
| gtatacatga tttatgaatt atgggctgga gaaggaaaat ctgcatgtaa tactgcgagt | 540 |
| cctgctgtgc aatcagctta caacacaatg atgtatatta tcacatcttgg ttggcgatt | 600 |
| tatccctgttag gttatcac aggttacctg atgggtgacg gtggatcagc tcttaactta | 660 |
| aaccttatct ataaccttgc tgactttgtt aacaagattc tatttggttt aattatatgg | 720 |
| aatgttgctg ttaaagaatc ttctaatt | 748 |

<210> 107

<211> 250

<212> PRT

<213> Marine eubacteria

<400> 107

| | | | | | |
|-----------------------------------------------------------------|----|--|----|--|----|
| Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr | | | | | |
| 1 | 5 | | 10 | | 15 |
| | 10 | | | | |
| | 15 | | | | |

| | | | |
|-------------------------------------------------------------|----|--|----|
| Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Gly Tyr Thr Gly Val | | | |
| 20 | 25 | | 30 |
| | 30 | | |

| | | | |
|-----------------------------------------------------------------|----|--|----|
| Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe | | | |
| 35 | 40 | | 45 |
| | 45 | | |

| | | | |
|-----------------------------------------------------------------|----|--|----|
| Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr | | | |
| 50 | 55 | | 60 |
| | 60 | | |

| | | | | | |
|-----------------------------------------------------------------|----|--|----|--|----|
| Val Pro Gly Leu Ile Thr Asp Ile Ala Phe Trp His Tyr Met Tyr Met | | | | | |
| 65 | 70 | | 75 | | 80 |
| | 75 | | 80 | | |
| | 80 | | | | |

| | | | |
|-----------------------------------------------------------------|----|--|----|
| Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr | | | |
| 85 | 90 | | 95 |
| | 95 | | |

| | | | |
|-----------------------------------------------------------------|-----|--|-----|
| Ile Asp Trp Leu Leu Thr Val Ser Leu Gln Ile Cys Glu Phe Tyr Leu | | | |
| 100 | 105 | | 110 |
| | 110 | | |

| | | | |
|-----------------------------------------------------------------|-----|--|-----|
| Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu | | | |
| 115 | 120 | | 125 |
| | 125 | | |

| | | | |
|-----------------------------------------------------------------|-----|--|-----|
| Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala | | | |
| 130 | 135 | | 140 |
| | 140 | | |

02716.0005.NPUS01.ST25.txt

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
180 185 190

Ile Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 108

<211> 751

<212> DNA

<213> Marine eubacteria

<400> 108

| | | | | | | |
|------------|------------|------------|-------------|------------|------------|-----|
| atgggttaat | tattactgat | attaggtat | gttattgcac | ttcctacatt | tgctgcagg | 60 |
| ggtgtgacc | ttgatgctag | tggcacact | ggtgttctt | tttgttagt | tactgctgct | 120 |
| ttattagcat | ctactgtatt | tttctttgtt | gaaagagata | gagttctgc | aaaatggaaa | 180 |
| acatcattaa | ctgtacctgg | tcttattact | gatattgctt | tctggcatta | catgtacatg | 240 |
| agaggggtat | ggattgaaac | tggtgattcg | ccaaactgtat | ttagatacat | tgattggta | 300 |
| ctaacagttt | ctctacaaat | atgtgaattc | tacttaattc | ttgctgctgc | aactaatgtt | 360 |
| gctggatcat | tatttaagaa | attactagtt | ggttctcttg | ttatgcttgt | gtttggttac | 420 |
| atgggtgaag | caggaatcat | ggctgcatgg | cctgcattca | ttattgggtg | tttagcttgg | 480 |
| gtatacatga | tttatgaatt | atgggctgga | gaaggaaaat | ctgcatgtaa | tactgcgagt | 540 |
| cctgctgtgc | aatcagctta | caacacaatg | atgtatatta | tcatcttgg | ttgggcgatt | 600 |
| tatcctgtag | gttatttcac | aggttacctg | atgggtgacg | gtggatcagc | tcttaactta | 660 |
| aaccttatct | ataaccttgc | tgactttgtt | aacaagattc | tatgggttt | aattatatgg | 720 |
| aatgttgctg | ttaaagaatc | ttctaatgct | a | | | 751 |

02716.0005.NPUS01.ST25.txt

<210> 109

<211> 250

<212> PRT

<213> Marine eubacteria

<400> 109

Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr
1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Pro Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Ala Val Phe Arg Tyr
85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Glu Ile Cys Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
180 185 190

Ile Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
210 215 220

02716.0005.NPUS01.ST25.txt

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Leu | Ala | Asp | Phe | Val | Asn | Lys | Ile | Leu | Phe | Gly | Leu | Ile | Ile | Trp |
| 225 | | | | | | 230 | | | | 235 | | | | | 240 |

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Val | Ala | Val | Lys | Glu | Ser | Ser | Asn | Ala |
| | | | | 245 | | | | | 250 |

<210> 110
<211> 751
<212> DNA
<213> Marine eubacteria

<400> 110
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ggtgtgacc ttgatgctag tgattacact ggtgttctt tttggtagt tactgctgct 120
ttattagcat ctactgtatt tttctttgtt gaaagagata gagtttctgc aaaatggaaa 180
acatcattaa ctgtacctgg tcttgtaact ggtattgctt tctggcatta catgtacatg 240
agaggggtat ggattgaaac tggtgattcg ccagctgtat ttagatacat tgattggta 300
ctaacagttc ctctagagat atgtgaattc tacttgattc ttgctgctgc aactaatgtt 360
gctggatcat tatttaagaa attactagtt ggttctcttg ttatgcttgt gttggttac 420
atgggtgaag caggaatcat ggctgcatgg cctgcattca ttattgggtg tttagcttgg 480
gtatacatga tttatgaatt atgggctgga gaaggaaaat ctgcatgtaa tactgcaagt 540
cctgctgtdc aatcagcttca caacacaatg atgtatattt tcattttgg ttggcgatt 600
tatcctgttag gttatccac aggttacctg atgggtgacg gtggatcagc tcttaactta 660
aaccttatct ataaccttgc tgactttgtt aacaagattc tatttggttt aattatatgg 720
aatgttgctg ttaagaatc ttctaatgct a 751

<210> 111
<211> 250
<212> PRT
<213> Marine eubacteria

<400> 111

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Gly | Lys | Leu | Leu | Val | Met | Leu | Gly | Ser | Val | Ile | Ala | Leu | Pro | Thr |
| 1 | | | | | 5 | | | 10 | | | | | 15 | | |

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Ala | Ala | Gly | Gly | Asp | Leu | Asp | Ala | Ser | Asp | Tyr | Thr | Gly | Val |
| | | | 20 | | | 25 | | | | 30 | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Phe | Trp | Leu | Val | Thr | Ala | Ala | Leu | Leu | Ala | Ser | Thr | Val | Phe | Phe |
| | | | | | 35 | | | 40 | | | 45 | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Val | Glu | Arg | Asp | Arg | Val | Ser | Ala | Lys | Trp | Lys | Thr | Ser | Leu | Thr |
| | | | | 50 | | 55 | | | 60 | | | | | | |

02716.0005.NPUS01.ST25.txt

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
 65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
 85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
 100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
 115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
 130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
 145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
 165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
 180 185 190

Ile Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
 195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
 210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
 225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 112

<211> 751

<212> DNA

<213> Marine eubacteria

<400> 112

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ctattagcat ctactgtatt tttctttgtt gaaagagaca gagtttctgc taaatggaaa 180

acatcattaa cagtatctgg ttttagttact ggtattgctt tttggcatta catgtacatg 240

02716.0005.NPUS01.ST25.txt

| | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|-----|
| agaggtgtat | ggattgaaac | tggtgattca | ccactgttt | ttagatacat | cga | ctggttt | 300 |
| ctaactgtgc | ctttactaat | ttgtgagg | tc | tacttaatac | tagcagc | acgtt | 360 |
| gctggttctt | tattcaagaa | attactagtt | ggttctt | ttatgctt | gtt | ggttac | 420 |
| atgggtgaag | caggaattat | ggcagcctgg | cctgcattca | ttataggatg | tttagcatgg | | 480 |
| gtatacatga | tttatgaatt | atgggctgga | gaaggaaagt | ctgc | atgtaa | ca | 540 |
| cctgcagttc | agtca | gctta | caacacaatg | atgtat | tc | atcttgg | 600 |
| taccctgt | tag | gttattc | ac | atgggtgacg | gtggatc | acgc | 660 |
| aac | tttatct | ataac | ttgc | tgactt | ttt | aacaagattc | 720 |
| aat | gttgctg | ttaaagaatc | ttct | aatg | ttt | aattatatgg | |
| | | | | | | | 751 |

<210> 113

<211> 250

<212> PRT

<213> Marine eubacteria

<400> 113

Met Gly Lys Arg Leu Val Ile Leu Gly Ser Val Ile Ala Leu Pro Thr
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Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
 20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
 35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
 50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
 65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
 85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
 100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
 115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
 130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
 Page 94

145

150

155

160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
 165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
 180 185 190

Ile Ile Ile Phe Gly Trp Ala Ile Tyr Leu Val Gly Tyr Phe Thr Gly
 195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
 210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
 225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 114

<211> 751

<212> DNA

<213> Marine eubacteria

<400> 114

| | |
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| ggtggtgacc tggatgctag tgactacact ggtgtatctt tctggtagt tactgctgct | 120 |
| ctattagcat ctactgtatt tttctttgtt gaaagagaca gagtttctgc taaatggaaa | 180 |
| acatcattaa cagtatctgg tttagttact ggtattgctt tttggcatta catgtacatg | 240 |
| agaggtgtat ggattgaaac tggtgattca ccaactgttt ttagatacat cgactggttg | 300 |
| ctaactgtgc cttaactaat ttgtgaggtc tacttaatac tagcagcagc tactaacgtt | 360 |
| gctggttctt tattcaagaa attactagtt ggttctcttg ttatgcttgt gttggttac | 420 |
| atgggtgaag caggaattat ggcagcctgg cctgcattca ttataggatg tttagcatgg | 480 |
| gtatacatga tttatgaatt atgggctgga gaaggaaagt ctgcatgtaa cactgcaagt | 540 |
| cctgcagttc agtcagctt caacacaatg atgtatatca tcattttgg ttggcattt | 600 |
| tacctttagt gttatttcac tggttaccta atgggtgacg gtggatcagc tcttaactta | 660 |
| aaccttatct ataaccttgc tgactttgtt aacaagattc tatttggttt aatttatatgg | 720 |
| aatgttgctg ttaaagaatc ttctaatgct a | 751 |

<210> 115

<211> 250

<212> PRT

02716.0005.NPUS01.ST25.txt

<213> Marine eubacteria

<400> 115

Met Gly Lys Ala Leu Leu Met Leu Gly Ser Val Ile Ala Leu Pro Thr
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Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Pro Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
180 185 190

Ile Ile Ile Phe Gly Trp Ala Ile Tyr Leu Val Gly Tyr Phe Thr Gly
195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Arg
225 230 235 240

02716.0005.NPUS01.ST25.txt

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 116
<211> 751
<212> DNA
<213> Marine eubacteria

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ccattagcat ctactgtatt tttctttgtt gaaagagaca gagttctgc taaatggaaa 180
acatcattaa cagtatctgg ttttagttact ggtattgctt ttggcatta catgtacatg 240
agaggtgtat ggattgaaac tggtgattca ccaactgttt ttagatacat cgactggttg 300
ctaactgtgc cttactaat ttgtgaggtc tacttaatac tagcagcagc tactaacgtt 360
gctggttctt tattcaagaa attactagtt ggttctcttg ttatgcttgt gttggttac 420
atgggtgaag caggaattat ggcagcctgg cctgcattca ttataggatg tttagcatgg 480
gtatacatga tttatgaatt atgggctgga gaaggaaagt ctgcatgtaa cactgcaagt 540
cctgcagttc agtcagctt caacacaatg atgtatatca tcattttgg ttggctatt 600
tacttgttag gttatcac tggtagtta atgggtgacg gtggatcagc tcttaactta 660
aaccttatct ataacctgc tgactttgtt aacaagattc tatttggttt aattataagg 720
aatgttgctg ttaaagaatc ttctaatgct a 751

<210> 117
<211> 250
<212> PRT
<213> Marine eubacteria

<400> 117

Met Gly Lys Gly Leu Leu Met Leu Gly Ser Val Ile Ala Leu Pro Ser
1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Arg Val Ala Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
65 70 75 80

02716.0005.NPUS01.ST25.txt

Arg Gly Val Trp Val Glu Thr Gly Glu Ser Pro Thr Val Phe Arg Tyr
85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

Leu Ile Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
145 150 155 160

Phe Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
180 185 190

Ile Ile Ile Ile Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
225 230 235 240

His Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 118

<211> 751

<212> DNA

<213> Marine eubacteria

<400> 118

atgggttaaag gattactgat gtttaggtgt gttattgcgc ttccatcttt tgctgctggc 60

ggtggcgatc ttgatgctag tgactataca ggtgttcat tctggtttgt tactgctgca 120

ttattagcct caactgtttt cttctttgtt gaaagagaca gagttgctgc aaaatggaaa 180

acatcgtaa cagtatctgg tcttggtact ggtattgctt tttggcatta catgtacatg 240

agaggggttt gggttagagac tggtaatca ccaactgtat tcagatatat tgactggcta 300

ctaacagtac cattattaat atgtgaggtc tacttaatac ttgcagctgc aactaatgtt 360

02716.0005.NPUS01.ST25.txt

gctggttctt tatttaaaaa gctattaatt gggtctcttg ttatgcgtgt gttgggtac 420
atgggtgaag caggaatcat ggcagcttgg cctgcattca ttattgggtg cttagcttgg 480
ttctacatga tttatgaact atgggcttgtt gaaggaaagt ctgcttgtaa tactgcaagt 540
ccagctgttc aatcagcata caacacgatg atgtatatta ttatcattgg ttgggctatt 600
taccctgttag gttactttac tggttaccta atgggtgacg gcggatctgc cttaaactta 660
aacctaattt ataaccttgc tgacttcgtt aacaagattc tatttggttt aattatctgg 720
catgttgctg ttaaagaatc ttctaattgt a 751

<210> 119
<211> 250
<212> PRT
<213> Marine eubacteria

<400> 119

Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Ser
1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ala Gly Asp Tyr Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Ile Glu Arg Asp Arg Val Ala Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Met Tyr Met
65 70 75 80

Arg Gly Val Trp Val Glu Thr Gly Glu Ser Pro Thr Val Phe Arg Tyr
85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Val Gly Cys Leu Ala Trp
145 150 155 160

02716.0005.NPUS01.ST25.txt

Phe Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
 165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
 180 185 190

Ile Ile Ile Ile Gly Trp Ala Ile Tyr Pro Leu Gly Tyr Phe Thr Gly
 195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
 210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
 225 230 235 240

His Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 120

<211> 751

<212> DNA

<213> Marine eubacteria

<400> 120

| | | | | | | |
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| atgggttaat | tattattgat | cttaggtgt | gttattgcgc | ttccttcatt | tgcatgggt | 60 |
| ggcgccgacc | ttgatgctgg | tgattacact | ggtgttagtt | tttgttagt | gactgcagct | 120 |
| cttttggctt | caactgtatt | tttctttatt | gaaagagata | gagttgctgc | taaatggaag | 180 |
| acatcttaa | cagtatctgg | tctagttact | ggtattgctt | tctggcatta | catgtacatg | 240 |
| agaggtgttt | gggtcgaaac | tggtaatca | ccaactgtat | tcagatatat | tgactggcta | 300 |
| cttacagtgc | ctttatataat | atgtgagttt | tatctgattc | ttgcagctgc | aactaatgtt | 360 |
| gctggttctt | tatthaagaa | gcttttagtt | ggttcttttg | taatgcttgt | atttggttat | 420 |
| atgggcgaag | caggaattat | ggcagcttgg | cctgcattca | ttgttggatg | tttagcttgg | 480 |
| ttctatata | tttatgagct | atgggcttgg | gaaggaaaat | ctgcatgcaa | tactgcaagt | 540 |
| ccagctgttc | aatcagcata | caacacaatg | atgtatatta | ttatcattgg | ttggctatt | 600 |
| tatcctctt | ggtactttac | tggttaccta | atgggtgacg | gcggatcagc | cttaaactta | 660 |
| aacctaattt | ataaccttgc | tgactttgtt | aacaagattc | tatgggttt | aatcatatgg | 720 |
| catgtcgctg | ttaaagaatc | ttctaattgt | a | | | 751 |

<210> 121

<211> 250

<212> PRT

<213> Marine eubacteria

<400> 121

02716.0005.NPUS01.ST25.txt

Met Gly Lys Gln Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Ser
1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Ile Glu Arg Asp Arg Val Ala Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr Met
65 70 75 80

Arg Gly Val Trp Val Glu Thr Gly Glu Ser Pro Thr Val Phe Arg Tyr
85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

Leu Ile Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
130 135 140

Gly Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
180 185 190

Ile Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly
195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr
210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
225 230 235 240

His Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

02716.0005.NPUS01.ST25.txt

<210> 122
<211> 751
<212> DNA
<213> Marine eubacteria

<400> 122
atgggttaaac aattactgat ctttaggtgt gttattgcgc ttccatcttt tgctgctggc 60
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ttattagcct caactgtttt ctttttatt gaaagagaca gagttgctgc aaaatggaaa 180
acgtcgtaa cagtatctgg ccttgtaact ggtattgctt tttggcacta cttgtatatg 240
agaggagttt ggtagagac tggtaatca ccaactgtat tcagatatat tgactggta 300
ctaacagtagc cattattaat atgtgagttt tacttaatac ttgcagctgc aactaatgtt 360
gctggttctt tattaaaaa gctattaatt gggtctcttg tgatgcttgt gttggttac 420
atgggtgaag caggaatcat ggcggcttgg cctgcattca ttattgggtg cttagcttgg 480
gtctatatga tatatgagct atgggcttgtt gaaggaaaat ctgcataa tactgcaagt 540
ccagctgttc aatcagcata caacacaatg atgtatatta ttatcttgg ttggctatt 600
taccctgttag gttactttac tggttaccta atgggtgacg gcggatctgc cttaaactta 660
aaccttatct ataaccttgc tgacttcgtt aacaagattc tatttggttt aattatctgg 720
catgttgctg tttaagaatc ttctaatgct a 751

<210> 123
<211> 250
<212> PRT
<213> Marine eubacteria

<400> 123

Met Gly Lys Leu Leu Met Met Leu Gly Ser Val Ile Ala Leu Pro Ser
1 5 10 15

Phe Ala Ala Ser Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val
20 25 30

Ser Phe Gly Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr Met
65 70 75 80

Arg Gly Val Trp Val Glu Thr Gly Glu Thr Pro Thr Val Phe Arg Tyr
Page 102

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu
 100 105 110

Ile Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
 115 120 125

Leu Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala
 130 135 140

Gly Ile Met Ala Ala Leu Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp
 145 150 155 160

Ile Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys
 165 170 175

Asn Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr
 180 185 190

Ile Ile Ile Phe Gly Trp Leu Ile Tyr Pro Val Gly Tyr Ala Ser Gly
 195 200 205

Tyr Leu Met Gly Asp Gly Gly Ser Ala Met Asn Leu Asn Leu Ile Tyr
 210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
 225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 124

<211> 751

<212> DNA

<213> Marine eubacteria

<400> 124

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| atgggttaat | tattaatgtat | gttaggtatg | tttattgcgc | ttccttcatt | tgccgcaagt | 60 |
| ggtggcatt | tggatgctag | tgattacact | ggtgtttcat | ttgggttggt | gactgcagct | 120 |
| ttattagctt | caactgtatt | tttctttgtt | gaaagagata | gagtttctgc | taaatggaag | 180 |
| acatcttga | cagtatcagg | tttagttact | ggtattgctt | tttggcatta | cttatatatg | 240 |
| agaggtgtat | gggttgaaac | tggtgaaact | ccaacagtat | ttagatatat | tgattggta | 300 |
| ttaactgttc | cattactaat | ctgcgagttt | tatttaattc | tagctgctgc | aactaacgta | 360 |
| gctggttcat | tatttaagaa | actacttgtt | ggtcacttg | taatgcttgt | gttggatac | 420 |

02716.0005.NPUS01.ST25.txt

| | |
|-------------------------------------------------------------------|-----|
| atgggtgaag caggaatcat ggcagcttg cctgcattca ttattgggtg ttggcatgg | 480 |
| atatatatga tttatgagct ttggcgttga gaaggaaat ctgcatacaa tactgcaagt | 540 |
| cctgccgttc aatcagctta caacaccatg atgtacatca tcattttgg ttggtaatc | 600 |
| tatccagttg gttatgcattc aggctatcta atggcgatg gcggatcagc tatgaactta | 660 |
| aacttaatat ataaccttgc tgactttgtt aacaagattc tatttggttt aattatctgg | 720 |
| aatgttgcgtg ttaaagaatc ttctaattgt a | 751 |

<210> 125

<211> 258

<212> PRT

<213> Marine eubacteria

<400> 125

Met Gly Lys Gly Leu Leu Met Leu Gly Ser Val Ile Ala Leu Pro Ser
1 5 10 15

Phe Ala Ala Gly Gly Asn Leu Asn Ala Ala Asp Val Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Ile Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr Met
65 70 75 80

Arg Gly Val Trp Val Asp Ser Trp Asn Pro Glu Thr Gly Met Gly Glu
85 90 95

Ser Pro Thr Glu Phe Arg Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu
100 105 110

Leu Ile Cys Glu Phe Tyr Leu Ile Leu Ala Ala Ala Thr Asn Val Ala
115 120 125

Gly Ser Leu Phe Lys Lys Leu Leu Val Gly Ser Leu Val Met Leu Ile
130 135 140

Ala Gly Tyr Met Gly Glu Ser Gly Asn Ala Asn Val Met Ile Ala Phe
145 150 155 160

Val Val Gly Cys Leu Ala Trp Leu Tyr Met Ile Tyr Glu Leu Trp Ala
165 170 175

02716.0005.NPUS01.ST25.txt

Gly Glu Gly Lys Ala Ala Cys Asn Thr Ala Ser Pro Ala Val Gln Ser
180 185 190

Ala Tyr Asn Thr Met Met Trp Ile Ile Ile Val Gly Trp Ala Ile Tyr
195 200 205

Pro Ala Gly Tyr Ala Ala Gly Tyr Leu Met Gly Gly Glu Ser Val Tyr
210 215 220

Ala Ser Asn Leu Asn Leu Ile Tyr Asn Leu Ala Asp Phe Val Asn Lys
225 230 235 240

Ile Leu Phe Gly Leu Ile Ile Trp His Val Ala Val Lys Glu Ser Ser
245 250 255

Asn Ala

<210> 126

<211> 775

<212> DNA

<213> Marine eubacteria

<400> 126

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ggaggcaact taaatgcagc ttagttaact ggtgttatctt tttggctagt tactgccgt 120
ttacttgctt caacagtatt ctttttattt gaaagagata gagtttctgc aaaatggaag 180
acatcactaa cagtatctgg ttttagttact ggtattgctt tttggcatta cctttacatg 240
agaggtgttt gggttgattc ttggaatcct gaaacaggaa tgggagaatc tccaactgaa 300
tttagatata ttgattggtt actaacagta cctttattaa tttgtgagtt ttatctaata 360
ttagctgctg caacaaatgt tgctggttca ttattcaaaa aattattagt tggttcattg 420
gtcatgctt ttgcaggata catgggtgaa tctggtaatg ccaatgtgat gattgcattc 480
gtagttggat gcttagcatg gttgtatatg atatatgaat tgtgggctgg tgaaggtaaa 540
gcagcttgca atacagcaag ccctgctgtt caatcagcat acaatacaat gatgtggatc 600
attattgttag gttgggctat atatcctgct ggatatgctg ctggctattt gatgggtgga 660
gaaagcggtt atgcttctaa ccttaacctg atatataacc ttgctgactt tgtaacaag 720
attttatttg gttaatcat ttggcatgtt gctgttaag aatcttctaa tgcta 775

<210> 127

<211> 257

<212> PRT

<213> Marine eubacteria

02716.0005.NPUS01.ST25.txt

<400> 127

Met Gly Lys Leu Leu Val Met Leu Gly Ser Val Ile Ala Leu Pro Ser
1 5 10 15

Phe Ala Ala Gly Gly Asn Leu Asp Ala Ala Asp Val Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe
35 40 45

Phe Ile Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr Met
65 70 75 80

Arg Gly Val Trp Val Asp Ser Trp Thr Gly Pro Gly Thr Gly Glu Ser
85 90 95

Pro Thr Glu Phe Arg Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Leu
100 105 110

Ile Cys Glu Phe Tyr Leu Ile Leu Ala Ala Ala Thr Asn Val Ala Gly
115 120 125

Ser Leu Phe Lys Lys Leu Leu Val Gly Ser Leu Val Met Leu Ile Ala
130 135 140

Gly Tyr Met Gly Glu Ser Gly Asn Ala Asn Val Met Ile Ala Phe Val
145 150 155 160

Val Gly Cys Leu Ala Trp Leu Tyr Met Ile Tyr Glu Leu Trp Ala Gly
165 170 175

Glu Gly Lys Ala Ala Cys Asn Thr Ala Ser Pro Ala Val Gln Ser Ala
180 185 190

Tyr Asn Thr Met Met Trp Ile Ile Val Gly Trp Ala Ile Tyr Pro
195 200 205

Ala Gly Tyr Ala Ala Gly Tyr Leu Met Gly Glu Ser Val Tyr Ala
210 215 220

Ser Asn Leu Asn Leu Ile Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile
225 230 235 240

Leu Phe Gly Leu Ile Ile Trp His Val Ala Val Lys Glu Ser Ser Asn
Page 106

Ala

<210> 128
<211> 772
<212> DNA
<213> Marine eubacteria

<400> 128
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ggaggtaact tagatgcagc ttagtctaact ggtgttatctt tttggctagt tactgcggct 120
ttacttgctt caacagtatt ctttttattt gaaagagata gagtttctgc aaaatggaag 180
acatcactaa cagtatctgg ttttagttact ggtattgcatttttgcattt cctttatatg 240
agaggcgttt gggttgatttc ttggacttgtt ccaggaaccg gagaatctcc aactgaattt 300
agatatattt attggttact aacagtacct ttattttttt gtgagttttt tctaattttt 360
gctgctgcaa caaatgttgc tggttcatta ttcaaaaaat tattagttgg ttcattggtc 420
atgcttattt caggatacat gggtgaatct ggtaatgcca atgtgatgtat tgcattcgta 480
gttggatgtct tagcatggtt gtatatgata tatgaattt gggctggta aggtaaagca 540
gcttgcaata cagcaagcccc tgctgttcaa tcagcataca atacaatgtat gtggatcatt 600
attgttaggtt gggcttatata tcctgctggta tatgctgctg gctatttgat gggtgagaa 660
agcgtttatg cttctaacct taacctgata tataaccttg ctgactttgt taacaagatt 720
ttatttggtt taatcatttg gcatgttgct gttaaagaat cttctaatgc ta 772

<210> 129
<211> 249
<212> PRT
<213> Marine eubacteria

<400> 129

Met Gly Lys Leu Leu Val Met Leu Gly Gly Val Ile Ala Leu Pro Ser
1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ile Gly Asp Ser Val Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Met Leu Ala Ala Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

02716.0005.NPUS01.ST25.txt

Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Cys Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

Leu Val Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu Ala
130 135 140

Gly Leu Ala Pro Ala Leu Pro Ala Phe Ile Leu Gly Met Ala Gly Trp
145 150 155 160

Val Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala Val
165 170 175

Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met Met
180 185 190

Ile Ile Val Phe Gly Trp Ser Ile Tyr Pro Leu Gly Tyr Val Ala Gly
195 . . . 200 . . . 205 . . .

Tyr Leu Met Gly Ala Val Asp Pro Ser Thr Leu Asn Leu Ile Tyr Asn
210 215 220

Leu Ala Asp Phe Ile Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp His
225 230 235 240

Val Ala Val Lys Glu Ser Ser Asn Ala
245

<210> 130

<211> 748

<212> DNA

<213> Marine eubacteria

<400> 130

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120

atgtttaccta ctactgtttt ttttttttttt gaaaagaaaaaa aacttaaaaaaa aaactggaaa 180

188

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acatcaattaa cagtatccgg tttaaattactt ggttttttgtttt tttggggatataa tttttatcttg 240

02716.0005.NPUS01.ST25.txt

| | |
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| ctaacgttc cattacaat ggttgagttt tatttaattc ttgcagcttg tactaatgta | 360 |
| gctggttcat tatttaagaa actgcttggtt ggttcattag taatgttagg tgctggattt | 420 |
| gctggtaag ctggactagc tcctgcattg cctgcttca tacttggtat ggctggatgg | 480 |
| gtatacatga tatatgagct gtatatgggt gaaggtaaag ctgcggtgag tactgctagt | 540 |
| cctgccgtaa attctgctta caatgcaatg atgatgatta tagttttgg ttggtctatt | 600 |
| tatccactgg gatatgtgc tggctattta atgggtgcag tagatccaag tacattaaat | 660 |
| ctaataaca accttgctga ttttattaa aagattttat tcggttaat aatctggcat | 720 |
| gttgctgtta aagaatcttc taatgcta | 748 |

<210> 131

<211> 249

<212> PRT

<213> Marine eubacteria

<400> 131

| | | | |
|-----------------------------------------------------------------|---|----|----|
| Met Gly Lys Leu Leu Met Ile Leu Gly Gly Val Ile Ala Leu Pro Ser | | | |
| 1 | 5 | 10 | 15 |

| | | |
|-----------------------------------------------------------------|----|----|
| Phe Ala Ala Gly Gly Gly Asp Leu Asp Ile Gly Asp Ser Val Gly Val | | |
| 20 | 25 | 30 |

| | | |
|-----------------------------------------------------------------|----|----|
| Ser Phe Trp Leu Val Thr Ala Ala Met Leu Ala Ala Thr Val Phe Phe | | |
| 35 | 40 | 45 |

| | | |
|-----------------------------------------------------------------|----|----|
| Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu Thr | | |
| 50 | 55 | 60 |

| | | | |
|-----------------------------------------------------------------|----|----|----|
| Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr Met | | | |
| 65 | 70 | 75 | 80 |

| | | |
|-----------------------------------------------------------------|----|----|
| Arg Gly Val Trp Ile Asp Thr Gly Gly Ser Pro Thr Val Phe Arg Tyr | | |
| 85 | 90 | 95 |

| | | |
|-----------------------------------------------------------------|-----|-----|
| Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr Leu | | |
| 100 | 105 | 110 |

| | | |
|-----------------------------------------------------------------|-----|-----|
| Ile Leu Ala Ala Cys Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu | | |
| 115 | 120 | 125 |

| | | |
|-----------------------------------------------------------------|-----|-----|
| Leu Val Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu Ala | | |
| 130 | 135 | 140 |

| | | | |
|-----------------------------------------------------------------|-----|-----|-----|
| Gly Leu Ala Pro Ala Leu Pro Ala Phe Ile Leu Gly Met Ala Gly Trp | | | |
| 145 | 150 | 155 | 160 |

02716.0005.NPUS01.ST25.txt

Val Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala Val
165 170 175

Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met Met
180 185 190

Ile Ile Val Phe Gly Trp Ser Ile Tyr Pro Leu Gly Tyr Val Ala Gly
195 200 205

Tyr Leu Met Gly Ala Val Asp Pro Ser Thr Leu Asn Leu Ile Tyr Asn
210 215 220

Leu Ala Asp Phe Ile Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp His
225 230 235 240

Val Ala Val Lys Glu Ser Ser Asn Ala
245

<210> 132

<211> 748

<212> DNA

<213> Marine eubacteria

<400> 132

| | | | | | | |
|-------------|------------|-------------|------------|------------|-------------|-----|
| atgggttaat | tattaatgat | cttaggttgt | gttattgcac | ttccttcctt | tgctgcttgt | 60 |
| ggtgttgtac | tagatatagg | agactctgtt | ggagtttcat | tctggcttgt | tactgctgct | 120 |
| atgttagctg | ctactgtttt | ctttttgtt | gaaagagacc | aagtaagcgc | aaagtggaaa | 180 |
| acatcattaa | cagtatcagg | ttaattact | ggtattgctt | tttggcatta | tctttacatg | 240 |
| agaggtgtat | ggatagatac | aggtggaagc | ccaacagtat | ttagatatat | tgattggttg | 300 |
| ctaactgttc | cattacaat | ggtgagttt | tatthaattc | ttgcagcttg | tactaatgtt | 360 |
| gctggttcat | tatthaagaa | actgcttgtt | ggtcattag | taatgttagg | tgctggattt | 420 |
| gctgggtgaag | ctggattagc | tcctgcattt | cctgctttca | tacttggat | ggctggatgg | 480 |
| gtatacatga | tatagtagct | gtatatgggt | gaaggtaaag | ctgcggtgag | tactgcttagt | 540 |
| cctgccgtaa | attctgctta | caatgcaatg | atgatgatta | tagttttgg | ttggtctatt | 600 |
| tatccactgg | gatatgttgc | tggctattt | atgggtgcag | tagatccaag | tacattaaat | 660 |
| ctaatacaca | accttgctga | ttttattaaat | aagattttat | tcggtttaat | aatctggcat | 720 |
| gttgctgtta | aagaatcttc | taatgcta | | | | 748 |

<210> 133

<211> 251

<212> PRT

<213> Marine eubacteria

02716.0005.NPUS01.ST25.txt

<400> 133

Met Gly Lys Leu Leu Met Ile Leu Gly Gly Val Ile Ala Leu Pro Ser
1 5 10 15

Phe Ala Ala Gly Gly Asp Leu Asp Ile Gly Asp Ser Val Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Met Leu Ala Ala Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr Met
65 70 75 80

Arg Gly Val Trp Val Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr
85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Cys Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

Leu Ile Gly Ser Leu Val Met Leu Ile Gly Gly Phe Leu Gly Glu Ala
130 135 140

Gly Met Ile Asp Val Thr Leu Ala Phe Val Ile Gly Met Ala Gly Trp
145 150 155 160

Leu Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala Val
165 170 175

Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met Leu
180 185 190

Ile Ile Val Val Gly Trp Ser Ile Tyr Pro Ala Gly Tyr Val Ala Gly
195 200 205

Tyr Leu Met Gly Gly Glu Gly Val Tyr Ala Ser Asn Leu Asn Leu Ile
210 215 220

Tyr Asn Leu Ala Asp Phe Ile Asn Lys Ile Leu Phe Gly Leu Ile Ile
225 230 235 240

02716.0005.NPUS01.ST25.txt

Trp His Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 134
 <211> 754
 <212> DNA
 <213> Marine eubacteria

<400> 134
 atgggttaat tattaatgtat attagggtgt gttattgcac ttcccttcttt tgctgctgg 60
 ggtgggtgatc tagatatagg agactctgtt ggagtttcat tctggcttgc tactgctgct 120
 atgttagctg ctactgtttt cttttttgtt gaaagagacc aagtaagcgc aaaatggaaa 180
 acatcattaa cagtatcagg ttataataaca ggtattgctt tctggacta ctgttatatg 240
 agaggggttt ggtagaaaaac aggcgattca ccaactgtat ttagatatat agattggctt 300
 ttaactgtac cactacaaat ggttaggttt tatctgatat tagctgcatg taccaatgtt 360
 gctggatctt tattaaaaa gctactaattc ggttcattgg tgatgttgat aggaggtttc 420
 ctaggtgaag ctggtatgtat agatgtaaaca cttagttttg taattggaat ggctggatgg 480
 ctatatatga tctatgagct atacatgggt gaaggtaaag ctgcggtgag tactgctagt 540
 cctgccgtaa attctgctta caatgcaatg atgcttattt ttgttgg 600
 tattctgctg gatatgttgc tggctatctt atggcggtg aaggagttata tgccctcaaatt 660
 ctaaacttaa tatataacct tgctgatattt atcaacaaga ttcttatttgg tttaattata 720
 tggcatgttg ctgttaaaga atcttctaat gcta 754

<210> 135
 <211> 251
 <212> PRT
 <213> Marine eubacteria

<400> 135

Met Gly Lys Gln Leu Leu Ile Leu Gly Gly Val Ile Ala Leu Pro Ser
 1 5 10 15

Phe Ala Ala Ser Gly Gly Asp Leu Asp Ser Ser Asp Leu Thr Gly Val
 20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ala Thr Val Phe Phe
 35 40 45

Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
 50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr Met
 65 70 75 80

02716.0005.NPUS01.ST25.txt

Arg Gly Val Trp Ile Glu Thr Gly Glu Thr Pro Thr Val Phe Arg Tyr
 85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Met Val Glu Phe Tyr Leu
 100 105 110

Ile Leu Ala Ala Cys Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
 115 120 125

Leu Gly Gly Ser Leu Val Met Leu Ile Ala Gly Tyr Met Gly Glu Ser
 130 135 140

Gly Ser Leu Pro Val Leu Pro Ala Phe Ile Val Gly Cys Leu Ala Trp
 145 150 155 160

Phe Tyr Met Ile Tyr Glu Leu Tyr Ala Gly Glu Gly Lys Ala Ala Val
 165 170 175

Thr Thr Ala Ser Pro Ala Val Met Ser Ala Tyr Asn Thr Met Met Leu
 180 185 190

Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala Gly
 195 200 205

Tyr Leu Met Gly Gly Asp Gly Val Tyr Ala Gln Asn Leu Asn Val Ile
 210 215 220

Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Val Ile
 225 230 235 240

Trp His Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 136

<211> 754

<212> DNA

<213> Marine eubacteria

<400> 136

atgggttaaac aattactgat ttttaggttgt gttattgcac ttcccttcgtt tgctgcaagt 60

ggggggcgatc ttgattctag tgatcttact ggagtttctt tttggcttgt tactgctgct 120

ctcttagctg ctactgtttt ctttttggtt gaaagagatc aagtaagtgc taaatggaaa 180

acatcactta cagttctgg ttttagttact ggtattgcat tctggcatta tcttttatatg 240

agaggtgtgt ggatcgaaac tggtgaaacg ccaacagtat ttagatatat tgattggttg 300

cttaactgttc ctttgcta at gggttggatcc tacttaatcc ttgcagcgtg cacaatgtt 360

02716.0005.NPUS01.ST25.txt

| | |
|--------------------------------------------------------------------|-----|
| gcgggttcat tatttaagaa actacttgtt ggtcgccttg taatgcttat tgaggatat | 420 |
| atgggtgagt ctggaaagtct tccagtatttgcattca ttgttgggtg ctttagcatgg | 480 |
| ttctacatga tttatgaact atatgcttgtt gaaggtaagg ctgcagttac tactgctagt | 540 |
| cctgctgtta tgtctgcata caatactatg atgttgcatttgcatttgcata tgctcagaat | 600 |
| tacccagctg gatatgctgc tggttaccta atgggtggtg atggcgata tgctcagaat | 660 |
| ttaaacgtta tatataacct tgctgacttt gttaacaaga ttttatttgg ttttagttatc | 720 |
| tggcatgttg ctgttaaaga atcttctaat gcta | 754 |

<210> 137

<211> 251

<212> PRT

<213> Marine eubacteria

<400> 137

| | | | |
|-----------------------------------------------------------------|---|----|----|
| Met Gly Lys Leu Leu Met Ile Leu Gly Gly Val Ile Ala Leu Pro Ser | | | |
| 1 | 5 | 10 | 15 |

| | | |
|-----------------------------------------------------------------|----|----|
| Phe Ala Ala Ser Gly Gly Asp Leu Asp Ser Ser Asp Leu Thr Gly Val | | |
| 20 | 25 | 30 |

| | | |
|-----------------------------------------------------------------|----|----|
| Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ala Thr Val Phe Phe | | |
| 35 | 40 | 45 |

| | | |
|-----------------------------------------------------------------|----|----|
| Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu Thr | | |
| 50 | 55 | 60 |

| | | | |
|-----------------------------------------------------------------|----|----|----|
| Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr Met | | | |
| 65 | 70 | 75 | 80 |

| | | |
|-----------------------------------------------------------------|----|----|
| Arg Gly Val Trp Ile Glu Thr Gly Glu Thr Pro Thr Val Phe Arg Tyr | | |
| 85 | 90 | 95 |

| | | |
|-----------------------------------------------------------------|-----|-----|
| Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Met Val Glu Phe Tyr Leu | | |
| 100 | 105 | 110 |

| | | |
|-----------------------------------------------------------------|-----|-----|
| Ile Leu Ala Ala Cys Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu | | |
| 115 | 120 | 125 |

| | | |
|-----------------------------------------------------------------|-----|-----|
| Leu Gly Gly Ser Leu Val Met Leu Ile Ala Gly Tyr Met Gly Glu Ser | | |
| 130 | 135 | 140 |

| | | | |
|-----------------------------------------------------------------|-----|-----|-----|
| Gly Ser Leu Pro Val Leu Pro Ala Phe Ile Val Gly Cys Leu Ala Trp | | | |
| 145 | 150 | 155 | 160 |

Phe Tyr Met Ile Tyr Glu Leu Tyr Ala Gly Glu Gly Lys Ala Ala val
Page 114

165

170

175

Thr Thr Ala Ser Pro Ala Val Met Ser Ala Tyr Asn Thr Met Met Leu
 180 185 190

Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala Gly
 195 200 205

Tyr Leu Met Gly Gly Asp Gly Val Tyr Ala Gln Asn Leu Asn Val Ile
 210 215 220

Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Val Ile
 225 230 235 240

Trp His Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 138

<211> 754

<212> DNA

<213> Marine eubacteria

<400> 138

| | |
|--------------------------------------------------------------------|-----|
| atgggttaat tattaaatgat ctttaggttgt gtcatcgcc ttcccttcgtt tgctgcagg | 60 |
| ggtgccgatc ttgattctag tgatctact ggagtatctt ttggcttgt tactgctgct | 120 |
| ctcttagctg ctactgtttt ctttttgtt gaaagagatc aagtaagtgc taaatggaaa | 180 |
| acatcaactt cagtttctgg tttagttact ggtattgcat tctggcatta tctctatatg | 240 |
| agaggtgtgt ggatcgaaac tggtaaacg ccaacagtat ttagatatat tgattggtt | 300 |
| ctaactgttc cgttactaat ggtaggttc tacttaattc ttgcggcttg cacaatgtt | 360 |
| gcgggctcat tatttaagaa actactaggt ggtagcttg taatgcttat tgcaggatat | 420 |
| atgggtgagt ctggaaagtct tccagtattt cctgcattca ttgttgatg cctagcatgg | 480 |
| ttctacatga tttatgaact atatgcttgt gaaggtaagg ctgcagttac tactgcttagt | 540 |
| cctgctgtta tgtctgcata caatactatg atgtttagtt tcgttagtagg ttggcaatt | 600 |
| tacccggctg gatatgctgc tggataccctt atgggttgtt atggcgtata tgctcagaat | 660 |
| ttaaacgtta tatataatct tgctgacttt gttacaaga ttttatttgg ttttagttatc | 720 |
| tggcatgtcg ctgttaaaga atcttctaat gcta | 754 |

<210> 139

<211> 251

<212> PRT

<213> Marine eubacteria

<400> 139

02716.0005.NPUS01.ST25.txt

Met Gly Lys Leu Leu Val Ile Leu Gly Gly Val Ile Ala Leu Pro Pro
 1 5 10 15

Phe Ala Ala Ser Gly Gly Asp Leu Asp Ser Ser Asp Leu Thr Gly Val
 20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ala Thr Val Phe Phe
 35 40 45

Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
 50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr Met
 65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Glu Thr Pro Thr Val Phe Arg Tyr
 85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Met Val Glu Phe Tyr Leu
 100 105 110

Ile Leu Ala Ala Cys Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
 115 120 125

Leu Gly Gly Ser Leu Val Met Leu Ile Ala Gly Tyr Met Gly Glu Ser
 130 135 140

Gly Ser Leu Pro Val Leu Pro Ala Phe Ile Val Gly Cys Leu Ala Trp
 145 150 155 160

Phe Tyr Met Ile Tyr Glu Leu Tyr Ala Gly Glu Gly Lys Ala Ala Val
 165 170 175

Thr Thr Ala Ser Pro Ala Val Met Ser Ala Tyr Asn Thr Met Met Leu
 180 185 190

Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala Gly
 195 200 205

Tyr Leu Met Gly Gly Asp Gly Val Tyr Ala Gln Asn Leu Asn Val Ile
 210 215 220

Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Val Ile
 225 230 235 240

Trp His Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

02716.0005.NPUS01.ST25.txt

<210> 140
<211> 754
<212> DNA
<213> Marine eubacteria

<400> 140
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ggtggcgatc ttgattctag tgatcttact ggagtatctt tttggcttgt tactgctgct 120
ctcttagctg ctactgtttt ctttttggtt gaaagagatc aagtaagtgc taaatggaaa 180
acatcactta cagtttctgg ttttagttact ggtattgcat tctggcatta tctctatatg 240
agagggtgtgt ggatcgaaac tggtgaaacg ccaacagtat ttagatatat tgattggttg 300
ctaactgttc cgttactaat ggttgaggttc tacttaattc ttgcagctt cacaatgtt 360
gcgggctcat tatttaagaa actactaggt ggttcgcttg taatgcttat tgccaggat 420
atgggtgagt ctggaaagtct tccagtattt cctgcattca ttgttgatg cctagcatgg 480
ttctacatga tttatgaact atatgcttgtt gaaggtaagg ctgcagttac tactgctagt 540
cctgctgtta tgtctgcata caatactatg atgttgattt tcgttagttagg ttgggcaatt 600
tacccggctg gatatgctgc tggataccctt atgggtggtg atggcgatata tgctcagaat 660
ttaaacgtta tatataatct tgctgacttt gttaacaaga ttttattttgg ttttagttatc 720
tggcatgtcg ctgttaaaga atcttctaat gcta 754

<210> 141
<211> 247
<212> PRT
<213> Marine eubacteria

<400> 141

Leu Leu Ile Leu Gly Gly Val Ile Ala Leu Pro Ser Phe Ala Ala Ser
1 5 10 15

Gly Gly Asp Leu Asp Ser Ser Asp Leu Thr Gly Val Ser Phe Trp Leu
20 25 30

Val Thr Ala Ala Leu Leu Ala Ala Thr Val Phe Phe Phe Val Glu Arg
35 40 45

Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu Thr Val Ser Gly Leu
50 55 60

Val Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr Met Arg Gly Val Trp
65 70 75 80

Ile Glu Thr Gly Glu Thr Pro Thr Val Phe Arg Tyr Ile Asp Trp Leu
85 90 95

02716.0005.NPUS01.ST25.txt

Leu Thr Val Pro Leu Leu Met Val Glu Phe Tyr Leu Ile Leu Ala Ala
100 105 110

Cys Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu Leu Gly Gly Ser
115 120 125

Leu Val Met Leu Ile Ala Gly Tyr Met Gly Glu Ser Gly Ser Leu Pro
130 135 140

Val Leu Pro Ala Phe Ile Val Gly Cys Leu Ala Trp Phe Tyr Met Ile
145 150 155 160

Tyr Glu Leu Tyr Ala Gly Glu Gly Lys Ala Ala Val Thr Thr Ala Ser
165 170 175

Pro Ala Val Met Ser Ala Tyr Asn Thr Met Met Leu Ile Ile Val Val
180 185 190

Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala Gly Tyr Leu Met Gly
195 200 205

Gly Asp Gly Val Tyr Ala Gln Asn Leu Asn Val Ile Tyr Asn Leu Ala
210 215 220

Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Val Ile Trp His Val Ala
225 230 235 240

Val Lys Glu Ser Ser Asn Ala
245

<210> 142

<211> 742

<212> DNA

<213> Marine eubacteria

<400> 142

ttattgtat tagtggtgt tattgcacctt ccttcgtttg ctgcaagtgg gggcgatctt 60

gattcttagtg atcttactgg agtttctttt tggcttgtta ctgctgctct cttagctgct 120

actgtttctt tttttgttga aagagatcaa gtaagtgcta aatggaaaac atcacttaca 180

gtttctgggt tagttactgg tattgcatttc tggcattatc tttatatgag aggtgtgtgg 240

atcgaaactg gtgaaacgcc aacagtattt agatataattg attgggtgct aactgttcct 300

ttgctaattgg ttgagttcta cttaatccctt gcagcgtgca caaatgttgc gggttcatta 360

ttaagaaac tactgggtgg ttcgcttgta atgcttattg caggatatat gggtgagtct 420

ggaagtcttc cagtattgcc tgcattcatt gttgggtgct tagcatggtt ctacatgatt 480

02716.0005.NPUS01.ST25.txt

tatgaactat atgctggtga aggtaaggct gcagttacta ctgctagtcc tgctgttatg 540
tctgcataca atactatgtat gttgattatc gtagtaggtt gggcaattta cccagctgga 600
tatgctgctg gttaccta at gggtggtgat ggcgtatatg ctcagaattt aaacgttata 660
tataaccttg ctgactttgt taacaagatt ttatggtt tagttatctg gcatgttgct 720
gttcaaagaat cttctaatgc ta 742

<210> 143
<211> 251
<212> PRT
<213> Marine eubacteria

<400> 143

Met Gly Lys Leu Leu Leu Ile Leu Gly Gly Val Ile Ala Leu Pro Ser
1 5 10 15

Phe Ala Ala Ser Gly Gly Asp Leu Asp Ser Ser Asp Leu Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ala Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr Met
65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Glu Thr Pro Thr Val Phe Arg Tyr
85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Met Val Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Cys Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

Leu Ile Gly Ser Leu Val Met Leu Ile Ala Gly Tyr Met Gly Glu Ser
130 135 140

Gly Ser Leu Pro Val Leu Pro Ala Phe Leu Val Gly Cys Ala Ala Trp
145 150 155 160

Leu Tyr Met Ile Tyr Glu Leu Tyr Ala Gly Glu Gly Lys Ala Ala Val
165 170 175

02716.0005.NPUS01.ST25.txt

Thr Thr Ala Ser Pro Ala Val Met Ser Ala Tyr Asn Thr Met Met Leu
 180 185 190

Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala Gly
 195 200 205

Tyr Leu Met Gly Gly Asp Gly Val Tyr Ala Gln Asn Leu Asn Val Ile
 210 215 220

Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Val Ile
 225 230 235 240

Trp His Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 144

<211> 754

<212> DNA

<213> Marine eubacteria

<400> 144

| | |
|---------------------------------------------------------------------|-----|
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| ggaggcgtac ttgattctag tgatcttact ggagtatctt ttggcttgt tactgctgct | 120 |
| ctcttagctg ctactgtttt ctttttggtt gaaagagatc aagtaagcgc taaatggaaa | 180 |
| acatcactta cagttctgg tttagttact ggtattgcat tctggcatta tctctatatg | 240 |
| agaggtgtgt ggatcgaaac cggtgaaaca ccaacagtat ttagatatat tgattggttg | 300 |
| ctaaactgttc cgttactaat ggtagtttc tacttaatcc tcgcagttg cactaatgtt | 360 |
| gcaggttcat tatttaagaa actactaatt ggtagtttg taatgcttat tgtaggatat | 420 |
| atgggtgagt ctgaaagtct tccagtattt cctgcattcc ttgttgggtg cgtagcatgg | 480 |
| ttatacatga tttatgaact atatgcttgtt gaaggtttagg ctgcagttac tactgctagt | 540 |
| cctgctgtta tgtctgcata caatactatg atgttggat tcgttagtgg ttggcaata | 600 |
| tacccagctg gatatgctgc tggtagttt atgggtggag atggcgata tgctcagaat | 660 |
| ttaaacgtta tatataacct tgctgacttt gttaacaaga ttttatttgg tttagttatc | 720 |
| tggcatgttg ctgttaaaga atcttctaata gcta | 754 |

<210> 145

<211> 250

<212> PRT

<213> Marine eubacteria

<400> 145

Met Gly Lys Leu Leu Leu Ile Leu Gly Gly Val Ile Ala Leu Pro Ser
 1 5 10 15

02716.0005.NPUS01.ST25.txt

Phe Ala Ala Ser Gly Gly Asp Leu Asp Ser Ser Asp Leu Thr Gly Val
20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ala Thr Val Phe Phe
35 40 45

Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr Met
65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Glu Thr Pro Thr Val Phe Arg Tyr
85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Met Val Glu Phe Tyr Leu
100 105 110

Ile Leu Ala Ala Cys Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
115 120 125

Leu Ile Gly Ser Leu Val Met Leu Ile Ala Gly Tyr Met Gly Glu Ser
130 135 140

Gly Ser Leu Pro Val Leu Pro Ala Phe Leu Val Gly Cys Ala Ala Trp
145 150 155 160

Leu Tyr Met Ile Tyr Glu Leu Tyr Ala Gly Glu Gly Lys Ala Ala Val
165 170 175

Thr Thr Ala Ser Pro Ala Val Met Ser Ala Tyr Asn Thr Met Met Leu
180 185 190

Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala Gly
195 200 205

Tyr Leu Met Gly Gly Asp Gly Val Tyr Ala Gln Asn Leu Asn Val Ile
210 215 220

Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Val Ile
225 230 235 240

Trp His Val Ala Val Lys Glu Ser Ser Asn
245 250

<210> 146
<211> 751

02716.0005.NPUS01.ST25.txt

<212> DNA
 <213> Marine eubacteria

<400> 146
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 ggaggcgatc ttgattctag tgatcttact ggagtatctt tttggcttgt tactgctgct 120
 ctcttagctg ctactgtttt ctttttgtt gaaagagatc aagtaagcgc taaatggaaa 180
 acatcactta cagttctgg ttttagtact ggtattgcat tctggcatta tctctatatg 240
 agaggtgtgt ggatcgaaac cggtgaaaca ccaacagtat ttaggtatat tgattggttg 300
 ctaactgttc cgttactaat gggtgagttc tacttaatcc tcgcagttg cactaatgtt 360
 gcaggttcat tatttaagaa actactaatt gggtcgcttg taatgcttat tgccaggat 420
 atgggtgagt ctggaagtct tccagtattt cctgcattcc ttgttgggtg cgccagcatgg 480
 ttatacatga tttatgaact atatgcttgtt gaaggtaagg ctgcagttac tactgctagt 540
 cctgctgtta tgtctgcata caatactatg atgttGattt tcgttagtagg ttgggcaata 600
 tacccagctg gatatgctgc tggttactta atgggtggag atggcgtata tgctcagaat 660
 ttaaacgtta tatataacct tgctgacttt gttaacaaga ttttatttgg ttttagttatc 720
 tggcatgttg ctgttaaaga atcttctaatt c 751

<210> 147
 <211> 251
 <212> PRT
 <213> Marine eubacteria

<400> 147

Met Gly Lys Leu Leu Ile Leu Gly Gly Val Ile Ala Leu Pro Ser
 1 5 10 15

Phe Ala Ala Ser Gly Gly Asp Leu Asp Ser Ser Asp Leu Thr Gly Val
 20 25 30

Ser Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ala Thr Val Phe Phe
 35 40 45

Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu Thr
 50 55 60

Val Ser Gly Leu Val Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr Met
 65 70 75 80

Arg Gly Val Trp Ile Glu Thr Gly Glu Thr Pro Thr Val Phe Arg Tyr
 85 90 95

Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Met Val Glu Phe Tyr Leu
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02716.0005.NPUS01.ST25.txt
 100 105 110

Ile Leu Ala Ala Cys Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu
 115 120 125

Leu Ile Gly Ser Leu Val Met Leu Ile Ala Gly Tyr Met Gly Glu Ser
 130 135 140

Gly Ser Leu Pro Val Leu Pro Ala Phe Leu Val Gly Cys Ala Ala Trp
 145 150 155 160

Leu Tyr Met Ile Tyr Glu Leu Tyr Ala Gly Glu Gly Lys Ala Ala val
 165 170 175

Thr Thr Ala Ser Pro Ala Val Met Ser Ala Tyr Asn Thr Met Met Leu
 180 185 190

Ile Ile val val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala Gly
 195 200 205

Tyr Leu Met Gly Gly Asp Gly Val Tyr Ala Gln Asn Leu Asn Val Ile
 210 215 220

Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Val Ile
 225 230 235 240

Trp His Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 148

<211> 754

<212> DNA

<213> Marine eubacteria

<400> 148

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| ggaggcgtac ttgattctag tgatcttact ggagtatctt tttggcttgt tactgctgct | 120 |
| ctcttagctg ctactgtttt cttttttgtt gaaagagatc aagtaagcgc taaatggaaa | 180 |
| acatcacta cagttctgg ttttagttact ggtattgcat tctggcatta tctcttatatg | 240 |
| agaggtgtgt ggatcgaaac cggtgaaaca ccaacagtat ttagatatat tgattggttg | 300 |
| cttaactgttc cgttactaat ggtaggttc tacttaatcc tcgcagcttg cactaatgtt | 360 |
| gcaggttcat tatttaagaa actactaatt ggtagcttg taatgcttat tgaggatata | 420 |
| atgggtgagt ctggaaagtct tccagtttg cctgcattcc ttgttgggtg cgtagcatgg | 480 |
| ttatacatga tttatgaact atatgcttgt gaaggtaagg ctgcagttac tactgctagt | 540 |

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| | | | | | | |
|------------|------------|------------|------------|------------|------------|-----|
| cctgctgtta | tgtctgcata | caatactatg | atgttgatta | tcgttagg | ttgggcaata | 600 |
| tacccagctg | gatatgctgc | tggttactta | atgggtggag | atggcgtata | tgctcagaat | 660 |
| ttaaacgtta | tatataacct | tgctgacttc | gttaacaaga | ttttatttgg | tttagttatc | 720 |
| tggcatgttg | ctgttaaaga | atcttctaat | gcta | | | 754 |

<210> 149

<211> 251

<212> PRT

<213> Marine eubacteria

<400> 149

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Gly | Lys | Arg | Leu | Val | Ile | Leu | Gly | Gly | Val | Ile | Ala | Leu | Pro | Ser |
| 1 | | | | 5 | | | | 10 | | | | | | 15 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Ala | Ala | Ser | Gly | Gly | Asp | Leu | Asp | Ser | Ser | Asp | Leu | Thr | Gly | Val |
| | | | 20 | | | 25 | | | | | | 30 | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Phe | Trp | Leu | Val | Thr | Ala | Ala | Leu | Leu | Ala | Ala | Thr | Val | Phe | Phe |
| | 35 | | | | 40 | | | | | | | 45 | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Val | Glu | Arg | Asp | Gln | Val | Ser | Ala | Lys | Trp | Lys | Thr | Ser | Leu | Thr |
| 50 | | | | | 55 | | | | 60 | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Ser | Gly | Leu | Val | Thr | Gly | Ile | Ala | Phe | Trp | His | Tyr | Leu | Tyr | Met |
| 65 | | | | 70 | | | | 75 | | | | | 80 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Gly | Val | Trp | Ile | Glu | Thr | Gly | Glu | Thr | Pro | Thr | Val | Phe | Arg | Tyr |
| | 85 | | | | 90 | | | | | | | 95 | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Asp | Trp | Leu | Leu | Thr | Val | Pro | Leu | Leu | Met | Val | Glu | Phe | Tyr | Leu |
| | 100 | | | | 105 | | | | | | 110 | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Leu | Ala | Ala | Cys | Thr | Asn | Val | Ala | Gly | Ser | Leu | Phe | Lys | Lys | Leu |
| | 115 | | | | | | 120 | | | | 125 | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Ile | Gly | Ser | Leu | Val | Met | Leu | Ile | Ala | Gly | Tyr | Met | Gly | Glu | Ser |
| 130 | | | | 135 | | | | | | 140 | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Asn | Leu | Pro | Val | Leu | Pro | Ala | Phe | Leu | Ile | Gly | Cys | Ala | Ala | Trp |
| 145 | | | | 150 | | | | | 155 | | | | | 160 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Tyr | Met | Ile | Tyr | Glu | Leu | Tyr | Ala | Gly | Glu | Gly | Lys | Ala | Ala | Val |
| | 165 | | | | | 170 | | | | | | 175 | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Thr | Ala | Ser | Pro | Ala | Val | Met | Ser | Ala | Tyr | Asn | Thr | Met | Met | Leu |
| | 180 | | | | 185 | | | | | | | 190 | | | |

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Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala Gly
195 200 205

Tyr Leu Met Gly Gly Asp Gly Val Tyr Ala Gln Asn Leu Asn Val Ile
210 215 220

Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Val Ile
225 230 235 240

Trp His Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 150

<211> 754

<212> DNA

<213> Marine eubacteria

<400> 150

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ctcttagctg ctactgtttt ctttttgtt gaaagagatc aagtaagcgc taaatggaaa 180
acatcaactt cagtttctgg tttagttact ggtattgcat tctggcatta tctctatatg 240
agaggtgtgt ggatcgaaac cggtgaaaca ccaacagtat ttagatatat tgattggttg 300
ctaaactgttc cgttactaat gggtgagttc tacttaatcc tcgcagctt cactaatgtt 360
gcaggttcat tatttaagaa actactaatt ggttcgcttg taatgcttat tgccaggat 420
atgggtgagt ctggaaatct tccagtattt cctgcattcc ttattgggtg cgccagcatgg 480
ttatacatga tttatgaact atatgcttgtt gaaggtaagg ctgcagttac tactgctagt 540
cctgctgtta tgtctgcata caatactatg atgttatttca tcgttagtgg ttggcaata 600
tacccagctg gatatgctgc tggttactta atgggtggag atggcgtata tgctcagaat 660
ttaaacgtta tatataacct tgctgacttt gttaacaaga ttttatttgg ttttagttatc 720
tggcatgttg ctgttaaaga atcttctaat gcta 754

<210> 151

<211> 254

<212> PRT

<213> Marine eubacteria

<400> 151

Ser Lys Lys Leu Leu Ala Thr Phe Leu Val Val Thr Ser Ile Pro Ala
1 5 10 15

Ile Ala Leu Ala Gly Gly His Ser Ser Gly Gly Leu Ala Gly Asp Asp
20 25 30

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Cys Val Gly Val Thr Phe Trp Ile Ile Ser Met Ala Met Val Ala Ser
35 40 45

Thr Val Phe Phe Ile Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys
50 55 60

Thr Ser Leu Thr Val Ser Ala Leu Met Thr Leu Ile Ala Ala Val His
65 70 75 80

Tyr Phe Tyr Met Arg Asp Val Trp Val Ala Thr Gly Glu Ser Pro Thr
85 90 95

Val Phe Arg Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Met Ile
100 105 110

Glu Phe Tyr Phe Ile Leu Ala Ala Val Thr Thr Val Ser Ser Gly Ile
115 120 125

Phe Trp Arg Leu Leu Val Gly Thr Val Ile Met Leu Val Gly Gly Tyr
130 135 140

Leu Gly Glu Ala Gly Met Ile Ser Val Met Thr Gly Phe Ile Ile Gly
145 150 155 160

Met Ile Gly Trp Leu Tyr Ile Leu Tyr Glu Ile Phe Ala Gly Glu Ala
165 170 175

Ser Lys Ala Asn Ala Ser Ser Gly Ser Ala Ala Cys Gln Thr Ala Phe
180 185 190

Gly Ala Leu Arg Leu Ile Val Thr Ile Gly Trp Ala Ile Tyr Pro Leu
195 200 205

Gly Tyr Phe Leu Gly Tyr Leu Gly Gly Ala Asp Pro Ala Thr Leu
210 215 220

Asn Ile Val Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Ala Phe Gly
225 230 235 240

Leu Ile Ile Trp Ala Ala Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 152
<211> 763
<212> DNA
<213> Marine eubacteria

02716.0005.NPUS01.ST25.txt

<400> 152
 agcaagaaac ttcttgcac atttctagta gtaacatcaa taccagcaat agcattagct 60
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 atttctatgg ctatggttgc ttcaacagta ttctttattg ttgagcgtga cagagttagt 180
 gcgaaatgga aaacatcatt aacagtatca gcgccttatga cttaatcgc agctgttcac 240
 tatttctaca tgagagatgt ttgggttagca actggcgaat caccaacagt cttagatata 300
 atagatttgt tgttaacagt tccacttcta atgattgagt tctactttat cttagcagcg 360
 gttacaactg tatcttcagg aattttctgg agattactag taggtactgt aataatgcta 420
 gtaggtggat acttaggtga agctggaatg atttcggtaa tgacaggaaa cattataggg 480
 atgataggtt ggctatacat tctttatgaa atcttgcag gtgaagctag caaagcaa 540
 gcttctagtg gaagtgcagc ttgtcaaaca gcctttggag cttagttaacc aatcgtaacc 600
 attgggttggg caatttatcc gctaggatata ttccttaggtt atctaggcgg tggggcagac 660
 ccagctacat taaacattgt ttacaactta gctgactttg taaacaaaat tgcttttgtt 720
 ttaattataat gggcagcagc tgtaaagaa tcttctaattt cta 763

<210> 153

<211> 254

<212> PRT

<213> Marine eubacteria

<400> 153

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Lys | Lys | Leu | Leu | Ala | Thr | Phe | Leu | Val | Val | Thr | Ser | Ile | Pro | Ala |
| 1 | | | | 5 | | | | | 10 | | | | 15 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Ala | Leu | Ala | Gly | Gly | His | Ser | Ser | Gly | Gly | Leu | Ala | Gly | Asp | Asp |
| | | | | 20 | | | | 25 | | | | 30 | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Tyr | Val | Gly | Val | Thr | Phe | Trp | Ile | Ile | Ser | Met | Ala | Met | Val | Ala | Ser |
| | | | | | 35 | | | 40 | | | | 45 | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Val | Phe | Phe | Ile | Val | Glu | Arg | Asp | Arg | Val | Ser | Ala | Lys | Trp | Lys |
| | | | | | 50 | | 55 | | | 60 | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Ser | Leu | Thr | Val | Ser | Ala | Leu | Val | Thr | Leu | Ile | Ala | Ala | Val | His |
| | | | | | 65 | | | 70 | | | | | 75 | | 80 |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Tyr | Phe | Tyr | Met | Arg | Asp | Val | Trp | Val | Ala | Thr | Gly | Glu | Ser | Pro | Thr |
| | | | | | 85 | | | 90 | | | | | 95 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Phe | Arg | Tyr | Ile | Asp | Trp | Leu | Leu | Thr | Val | Pro | Leu | Leu | Met | Ile |
| | | | | | 100 | | | 105 | | | | 110 | | | |

02716.0005.NPUS01.ST25.txt

Glu Phe Tyr Phe Ile Leu Ala Ala Val Thr Thr Val Ser Ser Gly Ile
 115 120 125

Phe Trp Arg Leu Leu Val Gly Thr Val Ile Met Leu Val Gly Gly Tyr
 130 135 140

Leu Gly Glu Ala Gly Met Ile Ser Val Met Thr Gly Phe Ile Ile Gly
 145 150 155 160

Met Ile Gly Trp Leu Tyr Ile Leu Tyr Glu Ile Phe Ala Gly Glu Ala
 165 170 175

Ser Lys Ala Asn Ala Ser Ser Gly Ser Ala Ala Cys Gln Thr Ala Phe
 180 185 190

Gly Ala Leu Arg Leu Ile Val Thr Ile Gly Trp Ala Ile Tyr Pro Leu
 195 200 205

Gly Tyr Phe Leu Gly Tyr Leu Gly Gly Ala Asp Pro Ala Thr Leu
 210 215 220

Asn Ile Val Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Ala Phe Gly
 225 230 235 240

Leu Ile Ile Trp Ala Ala Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 154

<211> 763

<212> DNA

<213> Marine eubacteria

<400> 154

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ggtgtggcatt catctggtgg ttttagcagga gatgactacg taggtgttac ttcttgatt 120

atttctatgg ctatgggtgc ttcaacagta ttctttattt ttgagcgtga cagagttgt 180

gcgaaatgga aaacatcatt aacagtatca gcgcgtgtga cttaatcgc agctgttcac 240

tatttctaca tgagagatgt ttggtagca actggcaat caccaacagt cttagatata 300

atagatttgt tgtaaacagt tccacttcta atgattgagt tctactttat cttagcagcg 360

gttacaactg tatcttcagg aattttctgg agattactag taggtactgt aataatgcta 420

gtaggtggat acttaggtga agctggaatg atttcggtaa tgacaggaaa cattataggg 480

atgataggtt ggctatacat tctttatgaa atctttgcag gtgaagctag caaagcaaat 540

gcttctagtg gaagtgcagc ttgtcaaaca gcctttggag ctttacgttt aatcgtaacc 600

attgggttggg caatttatcc gctaggatat ttcttaggtt atctaggcgg tggggcagac 660

02716.0005.NPUS01.ST25.txt

ccagctacat taaacattgt ttacaactta gctgactttg taaacaaaat tgctttgg 720
ttaattataat gggcagcagc tgttaaagaa tcttctaatt cta 763

<210> 155
<211> 254
<212> PRT
<213> Marine eubacteria

<400> 155

Ser Lys Lys Phe Phe Ser Thr Leu Leu Leu Val Thr Ser Leu Pro Thr
1 5 10 15

Leu Ala Leu Ala Gly Gly His Ser Ser Gly Leu Ala Gly Asp Asp Tyr
20 25 30

Val Gly Val Thr Phe Trp Ile Ile Ser Met Ala Met Val Ala Ser Thr
35 40 45

Val Phe Phe Ile Val Glu Arg Asp Arg Val Ser Ser Lys Trp Lys Thr
50 55 60

Ser Leu Thr Val Ser Ala Leu Val Thr Leu Ile Ala Ala Val His Tyr
65 70 75 80

Phe Tyr Met Arg Asp Val Trp Val Ala Thr Gly Glu Ser Pro Thr Val
85 90 95

Phe Arg Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Met Ile Glu
100 105 110

Phe Tyr Phe Ile Leu Ala Ala Val Thr Thr Val Ser Ser Gly Ile Phe
115 120 125

Trp Arg Leu Leu Ile Gly Thr Val Val Met Leu Val Gly Gly Tyr Met
130 135 140

Gly Glu Ala Gly Met Ile Ser Val Met Thr Gly Phe Ile Ile Gly Met
145 150 155 160

Ile Gly Trp Leu Tyr Ile Leu Tyr Glu Ile Phe Ala Gly Glu Ala Ser
165 170 175

Lys Ala Asn Ala Ser Ser Gly Ser Ala Ala Cys Gln Thr Ala Phe Gly
180 185 190

Ala Leu Arg Leu Ile Val Thr Val Gly Trp Ala Ile Tyr Pro Ile Gly
195 200 205

02716.0005.NPUS01.ST25.txt

Tyr Phe Val Gly Tyr Leu Thr Gly Gly Gly Ala Asp Ala Ala Thr Leu
210 215 220

Asn Ile Val Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Ala Phe Gly
225 230 235 240

Leu Ile Ile Trp Ala Ala Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 156

<211> 763

<212> DNA

<213> Marine eubacteria

<400> 156

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ggtgggcatt catctggtct tgctggagat gactatgtag gtgttacttt ctggattatt 120
tccatggcta tggttgcgtc aacagtattt ttcattgtgg agcgtgacag agttagctca 180
aatggaaaaa catcattaac agtatcagct ttggttacat taattgctgc agtgcattat 240
ttttatatga gagatgtatg ggttagcaact ggtgaatcac caacagtatt tagatata 300
gattggttat taacagtgcc actattaatg attgagttct actttatttt agcagcggta 360
actacagttt cttcaggaat attctggaga ctattaattt gtacagttgt aatgctagta 420
ggtgggtata tgggtgaagc tggaaatgatc tcagtgatga caggttcat tatkccggatg 480
atcgggttggc tatatattct ttacgaaatc tttgctggtg aagctagtaa agcaaacgct 540
tctagtgaaa gcgcagcgtc ccaaacagca tttgggtgcgt tacgttaat cgttacagtt 600
ggttgggcga tctatccaat aggatacttc gtaggctatc taactggtg tggtgcagac 660
gcagctacac taaacatagt ttacaactta gctgatttg taaacaaaat tgccttttgt 720
ttaatcatat gggcagcagc tgttaaagaa tcttctaattt cta 763

<210> 157

<211> 254

<212> PRT

<213> Marine eubacteria

<400> 157

Ser Lys Lys Phe Phe Ser Thr Leu Leu Leu Val Thr Ser Leu Pro Thr
1 5 10 15

Leu Ala Leu Ala Gly Gly His Ser Ser Gly Leu Ala Gly Asp Asp Tyr
20 25 30

Val Gly Val Thr Phe Trp Ile Ile Ser Met Ala Met Val Ala Ser Thr
Page 130

Val Phe Phe Ile Val Glu Arg Asp Arg Arg Val Ser Ser Lys Trp Lys Thr
 50 55 60

Ser Leu Thr Val Ser Ala Leu Val Thr Leu Ile Ala Ala Val His Tyr
 65 70 75 80

Phe Tyr Met Arg Asp Val Trp Val Ala Thr Gly Glu Ser Pro Thr Val
 85 90 95

Phe Arg Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Leu Met Ile Glu
 100 105 110

Phe Tyr Phe Ile Leu Ala Ala Val Thr Thr Val Ser Ser Gly Ile Phe
 115 120 125

Trp Arg Leu Leu Ile Gly Thr Val Val Met Leu Val Gly Gly Tyr Met
 130 135 140

Gly Glu Ala Gly Met Ile Ser Val Met Thr Gly Phe Ile Ile Gly Met
 145 150 155 160

Ile Gly Trp Leu Tyr Ile Leu Tyr Glu Ile Phe Ala Gly Glu Ala Ser
 165 170 175

Lys Ala Asn Ala Ser Ser Gly Ser Ala Ala Cys Gln Thr Ala Phe Gly
 180 185 190

Ala Leu Arg Leu Ile Val Thr Val Gly Trp Ala Ile Tyr Pro Ile Gly
 195 200 205

Tyr Phe Val Gly Tyr Leu Thr Gly Gly Gly Ala Asp Ala Ala Thr Leu
 210 215 220

Asn Ile Val Tyr Asn Leu Ala Asp Phe Val Asn Lys Ile Ala Phe Gly
 225 230 235 240

Leu Ile Ile Trp Ala Ala Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 158

<211> 763

<212> DNA

<213> Marine eubacteria

<400> 158

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60

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| | | | | | | |
|-------------|-------------|-------------|------------|------------|------------|-----|
| ggtgggcatt | catctggtct | tgctggagat | gactatgtag | gtgttacttt | ctggattatt | 120 |
| tccatggcta | tggttgcgtc | aacagtattt | ttcattgtgg | agcgtgacag | athtagctca | 180 |
| aaatggaaaa | catcattaac | agtatcagct | ttggttacat | taattgctgc | agtgcattat | 240 |
| tttatatatga | gagatgtatg | ggttagcaact | ggtgaatcac | caacagtatt | tagatata | 300 |
| gattggttat | taacagtgcc | actattaatg | attgagttct | actttatccc | agcagcggta | 360 |
| actacagttt | cttcaggaat | attctggaga | ctattaattg | gtacagttgt | aatgctagta | 420 |
| ggtgggtata | tgggtgaagc | tggaatgatc | tcagtgatga | caggttcat | tatcgggatg | 480 |
| atcggttggc | tatattattct | ttacgaaatc | tttgctggtg | aagctagtaa | agcaaacgct | 540 |
| tctagtggaa | gcgcagcatg | ccaaacagca | tttggtgcgt | tacgttaat | cgttacagtt | 600 |
| ggttggcga | tctatccaat | aggatacttc | gtaggctatc | taactggtgg | tggtgcagac | 660 |
| gcagctacac | taaacatagt | ttacaactta | gctgattttg | taaacaaaat | tgcctttgg | 720 |
| ttaatcatat | ggcagcagc | tgttaaagaa | tcttctaatt | cta | | 763 |

<210> 159

<211> 250

<212> PRT

<213> Marine eubacteria

<400> 159

Met Lys Leu Leu Leu Ile Leu Gly Ser Ala Ile Ala Leu Pro Ser Phe
 1 5 10 15

Ala Ala Ala Gly Gly Asp Leu Asp Ile Ser Asp Thr Val Gly Val Ser
 20 25 30

Phe Trp Leu Val Thr Ala Gly Met Leu Ala Ala Thr Val Phe Phe Phe
 35 40 45

Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu Thr Val
 50 55 60

Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr Met Arg
 65 70 75 80

Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Arg Tyr Ile
 85 90 95

Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr Leu Ile
 100 105 110

Leu Ala Ala Cys Thr Ser Val Ala Ala Ser Leu Phe Lys Lys Leu Leu
 115 120 125

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Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu Ala Gly
130 135 140

Leu Ala Pro Val Leu Pro Ala Phe Ile Ile Gly Met Ala Gly Trp Leu
145 150 155 160

Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala Val Ser
165 170 175

Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met Met Ile
180 185 190

Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala Gly Tyr
195 200 205

Leu Met Gly Gly Glu Gly Val Tyr Ala Ser Asn Leu Asn Leu Ile Tyr
210 215 220

Asn Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp
225 230 235 240

Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 160

<211> 750

<212> DNA

<213> Marine eubacteria

<400> 160

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ggcgatctag atataagtga tactgttgtt gttcattct ggctggttac agctggatag 120
ttagcggcaa ctgtgttctt ttttgtaaa agagaccaag tcagcgctaa gtggaaaact 180
tcacttactg tatctggttt aattactggt atagctttt ggcattatct ctatatgaga 240
ggtgtttgga tagacactgg tgataccca acagtattca gatatattga ttggttatta 300
actgttccat tacaaatggt tgagttctat ctaattcttg ctgcttgac aagtgttgct 360
gcttcattat ttaagaagct tctagctggt tcattagtaa tgtaggtgc tggatttgca 420
ggcgaagctg gattagctcc tgtattacct gcttcattt ttggatggc tggatggta 480
tacatgatt atgagctata tatgggtgaa ggtaggctg ctgtaagtac tgcaagtcc 540
gctgttaact ctgcatacaa cgcaatgatg atgattattg ttgttgatg ggcaatttat 600
cctgctggat atgctgctgg ttacctaattg ggtggcgaag gtgtatacgc ttcaaactta 660
aaccttataat ataaccttgc tgactttgtt aacaagattc tatttggttt gatcatttgg 720

aatgttcag ttaagaatc tagtaatgct

750

<210> 161

<211> 230

<212> PRT

<213> Marine eubacteria

<400> 161

Met Lys Val Leu Met Leu Asn Pro Gly Asp His Val Ala Ile Ser Phe
 1 5 10 15

Trp Leu Ile Ser Met Ala Met Val Ala Ala Thr Ala Phe Phe Phe Leu
 20 25 30

Glu Arg Asp Arg Val Ala Ala Lys Trp Lys Thr Ser Leu Thr Val Ala
 35 40 45

Gly Leu Val Thr Gly Ile Ala Ala Trp His Tyr Phe Tyr Met Arg Gly
 50 55 60

Val Trp Val Ala Thr Gly Asp Ser Pro Thr Val Leu Arg Tyr Ile Asp
 65 70 75 80

Trp Leu Ile Thr Val Pro Leu Gln Ile Val Glu Phe Tyr Val Ile Leu
 85 90 95

Ala Ala Met Thr Ala Val Ala Ser Ser Leu Phe Trp Arg Leu Leu Ile
 100 105 110

Ala Ser Ile Ile Met Leu Val Phe Gly Tyr Met Gly Glu Thr Gly Ala
 115 120 125

Met Asn Val Thr Leu Ala Phe Val Ile Gly Met Ala Gly Trp Leu Tyr
 130 135 140

Ile Ile Tyr Glu Val Phe Ala Gly Glu Ala Ser Lys Ala Ser Ala Gly
 145 150 155 160

Ser Gly Asn Ala Ala Gly Gln Thr Ala Phe Asn Ala Leu Arg Leu Ile
 165 170 175

Val Thr Val Gly Trp Ala Ile Tyr Pro Ile Gly Tyr Ala Val Gly Tyr
 180 185 190

Phe Gly Gly Val Asp Ala Gly Ser Leu Asn Leu Ile Tyr Asn Leu
 195 200 205

Ala Asp Phe Val Asn Lys Ile Ala Phe Gly Met Ala Ile Tyr Val Ala
 Page 134

02716.0005.NPUS01.ST25.txt
210 215 220

Ala Val Ser Asp Ser Asn
225 230

<210> 162
<211> 690
<212> DNA
<213> Marine eubacteria

<400> 162
atgaaagtat taatgctaaa tcccggagat cacgttgcga tttcgaaaa gttgatctct 60
atggccatgg ttgccgctac tgcttcctc tttctgaaa gagatcgtgt agcagctaaa 120
tggaaaacgt cccttacagt agctggttta gttactggta ttgcggcgtg gcactacttc 180
· tacatgagag gcgtatgggt tgctactgggt gactcaccaa ctgtccttcg ttacattgac 240
tggttgatta ctgtgcctct acaaatcgta gaattctacg taattcttgc agcgatgact 300
gctgttgctt caaggctttt ctggagacta ttaattgcat caattattat gcttgtcttt 360
ggttacatgg gtgaaactgg agcgatgaat gtaactctag cttcgtaat aggtatggct 420
ggatggttat acatcatcta cgagggtttt gcaggtgaag caagcaaggc aagtgcgtgg 480
agtggaaacg ctgctggtca gactgcattt aacgcattga gattaattgt tacagtagga 540
tggcaattt atccaattgg ttatgctgta ggttacttcg gtggtggcgt agacgccggt 600
tcattgaact taatctataa cttgcagac tttgttaata aaattgcatt tggtatggct 660
atttatgttag ctgcagtatc agacagcaac 690

<210> 163
<211> 249
<212> PRT
<213> Marine eubacteria

<400> 163

Met Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr Phe
1 5 10 15

Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val Ser
20 25 30

Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe Phe
35 40 45

Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr Val
50 55 60

Ser Gly Leu Val Thr Gly Ile Ala Phe Trp Lys Tyr Met Tyr Met Arg
65 70 75 80

02716.0005.NPUS01.ST25.txt

Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr Ile
85 90 95

Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu Ile
100 105 110

Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu Leu
115 120 125

Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala Gly
130 135 140

Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp Val
145 150 155 160

Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys Asn
165 170 175

Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr Ile
180 185 190

Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly Tyr
195 200 205

Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr Asn
210 215 220

Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp Asn
225 230 235 240

Val Ala Val Lys Glu Ser Ser Asn Ala
245

<210> 164
<211> 750
<212> DNA
<213> Marine eubacteria

<400> 164
atgaaattat tactgatatt aggttagtgtt attgcacttc ctacatttg tgcaggtgg 60
ggtagacctg atgctagtga ttacactgg gttctttt gtttagttac tgctgctta 120
tttagcatcta ctgtatTTT ctttgtgaa agagatagag tttctgcaaa atggaaaaca 180
tcattaactg tatctggctc tgttactgg attgctttct ggaaatacat gtacatgaga 240
ggggtatgga ttgaaactgg tgattcgcca actgtattta gatacattga ttggttacta 300
acagttccctc tattaatatg tgaattctac ttaattcttg ctgctgcaac taatgttgct 360

02716.0005.NPUS01.ST25.txt

| | |
|--------------------------------------------------------------------|-----|
| ggatcattat ttaagaaatt actagtttgtt tctttgtta tgcttggtt tggttacatg | 420 |
| ggtgaagcag gaatcatggc tgcattggcgc gcattcatta ttgggtgttt agcttgggta | 480 |
| tacatgattt atgaattatg ggctggagaa ggaaaatctg catgtaatac tgcaagtcct | 540 |
| gctgtgcaat cagcttacaa cacaatgatg tatattatca tctttgggtt ggcgatttat | 600 |
| cctgttagtt atttcacagg ttacctgatg ggtgacggtg gatcagctct taacttaaac | 660 |
| cttatctata accttgctga ctttgttaac aagattctat ttgggttaat tataatggaat | 720 |
| gttgctgtta aagaatcttc taatgcttaa | 750 |

<210> 165
<211> 249
<212> PRT
<213> Marine eubacteria

<400> 165

Met Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr Phe
1 5 10 15

Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val Ser
20 25 30

Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe Phe
35 40 45

Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr Val
50 55 60

Ser Gly Leu Val Thr Gly Ile Ala Phe Trp Asn Tyr Met Tyr Met Arg
65 70 75 80

Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr Ile
85 90 95

Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu Ile
100 105 110

Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu Leu
115 120 125

Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala Gly
130 135 140

Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp Val
145 150 155 160

02716.0005.NPUS01.ST25.txt

Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys Asn
 165 170 175

Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr Ile
 180 185 190

Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly Tyr
 195 200 205

Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr Asn
 210 215 220

Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp Asn
 225 230 235 240

Val Ala Val Lys Glu Ser Ser Asn Ala
 245

<210> 166

<211> 750

<212> DNA

<213> Marine eubacteria

<400> 166

atgaaattat tactgatatt aggtagtgtt attgcacttc ctacattgc tgcaggttgt 60

ggtgaccttg atgctagtga ttacactggt gtttctttt ggttagttac tgctgcttta 120

ttagcatcta ctgtatTTT ctttgtaa agagatagag tttctgcaaa atggaaaaca 180

tcattaactg tatctggctc tgttactggt attgctttct ggaattacat gtacatgaga 240

ggggtatgga ttgaaactgg tgattcgcca actgtatTTA gatacattga ttggttacta 300

acagttccctc tattaatATG tgaattctac ttaattcttgc tgctgcaac taatgttgct 360

ggatcattat ttaagaaatt actagtttgt tctttgtta tgcttggtt tggttacatg 420

ggtaaggcag gaatcatggc tgcatggcct gcattcatta ttgggtgttt agcttgggta 480

tacatgattt atgaattatG ggctggagaa ggaaaatctg catgtaatac tgcaagtcc 540

gctgtgcaat cagcttacaa cacaatgatg tatattatca tctttgggtt ggcgatttat 600

cctgttagtt atttcacagg ttacctgatg ggtgacgggt gatcagctct taacttaaac 660

cttatctata accttgctga ctttgttaac aagattctat ttggtttaat tataatggaat 720

gttgctgtta aagaatcttc taatgcttaa 750

<210> 167

<211> 249

<212> PRT

<213> Marine eubacteria

<400> 167

02716.0005.NPUS01.ST25.txt

Met Lys Leu Leu Leu Ile Leu Gly Ser Val Ile Ala Leu Pro Thr Phe
1 5 10 15

Ala Ala Gly Gly Asp Leu Asp Ala Ser Asp Tyr Thr Gly Val Ser
20 25 30

Phe Trp Leu Val Thr Ala Ala Leu Leu Ala Ser Thr Val Phe Phe Phe
35 40 45

Val Glu Arg Asp Arg Val Ser Ala Lys Trp Lys Thr Ser Leu Thr Val
50 55 60

Ser Gly Leu Val Thr Gly Ile Ala Phe Trp Gln Tyr Met Tyr Met Arg
65 70 75 80

Gly Val Trp Ile Glu Thr Gly Asp Ser Pro Thr Val Phe Arg Tyr Ile
85 90 95

Asp Trp Leu Leu Thr Val Pro Leu Leu Ile Cys Glu Phe Tyr Leu Ile
100 105 110

Leu Ala Ala Ala Thr Asn Val Ala Gly Ser Leu Phe Lys Lys Leu Leu
115 120 125

Val Gly Ser Leu Val Met Leu Val Phe Gly Tyr Met Gly Glu Ala Gly
130 135 140

Ile Met Ala Ala Trp Pro Ala Phe Ile Ile Gly Cys Leu Ala Trp Val
145 150 155 160

Tyr Met Ile Tyr Glu Leu Trp Ala Gly Glu Gly Lys Ser Ala Cys Asn
165 170 175

Thr Ala Ser Pro Ala Val Gln Ser Ala Tyr Asn Thr Met Met Tyr Ile
180 185 190

Ile Ile Phe Gly Trp Ala Ile Tyr Pro Val Gly Tyr Phe Thr Gly Tyr
195 200 205

Leu Met Gly Asp Gly Gly Ser Ala Leu Asn Leu Asn Leu Ile Tyr Asn
210 215 220

Leu Ala Asp Phe Val Asn Lys Ile Leu Phe Gly Leu Ile Ile Trp Asn
225 230 235 240

Val Ala Val Lys Glu Ser Ser Asn Ala
245

02716.0005.NPUS01.ST25.txt

<210> 168
<211> 750
<212> DNA
<213> Marine eubacteria

<400> 168
atgaaattat tactgatatt aggttagtgtt attgcacttc ctacattgc tgcaggtgg 60
ggtgaccttg atgctagtga ttacactggc gttcttttt ggttagttac tgctgctta 120
ttagcatcta ctgtatTTT ctttggaa agagatagag tttctgaaa atggaaaaca 180
tcattaactg tatctggct tgttactggc attgcttct ggcagttacat gtacatgaga 240
gggttatgga ttgaaactgg tgattcgcca actgtatTTA gatacattga ttggttacta 300
acagttcc tc tattaaatg tgaattctac ttaattcttg ctgctgcaac taatgttgct 360
ggatcattat ttaagaaatt actagttggc tctcttggta tgcttgggtt tggttacatg 420
ggtaaggcag gaatcatggc tgcatggcgc gcattcatta ttgggtgtt agcttggta 480
tacatgattt atgaattatg ggctggagaa ggaaaatctg catgttaatac tgcaagtcct 540
gctgtgcaat cagcttacaa cacaatgatg tatattatca tctttgggtt ggcgatttat 600
cctgttaggtt attcacagg ttacctgatg ggtgacggc gatcagctct taacttaaac 660
cttatctata accttgctga ctttggtaac aagattctat ttgggttaat tataatggaat 720
gttgctgtta aagaatcttc taatgcttaa 750

<210> 169
<211> 252
<212> PRT
<213> Marine eubacteria

<400> 169

Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Ala Ile Ala Leu Pro
1 5 10 15

Ser Phe Ala Ala Ala Gly Gly Asp Leu Asp Ile Ser Asp Thr Val Gly
20 25 30

Val Ser Phe Trp Leu Val Thr Ala Gly Met Leu Ala Ala Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Ala Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp Lys Tyr Leu Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Arg
Page 140

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr
 100 105 110

Leu Ile Leu Ala Ala Cys Thr Ser Val Ala Ala Ser Leu Phe Lys Lys
 115 120 125

Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu
 130 135 140

Ala Gly Leu Ala Pro Val Leu Pro Ala Phe Ile Ile Gly Met Ala Gly
 145 150 155 160

Trp Leu Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala
 165 170 175

Val Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met
 180 185 190

Met Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala
 195 200 205

Gly Tyr Leu Met Gly Gly Glu Gly Val Tyr Ala Ser Asn Leu Asn Leu
 210 215 220

Ile Tyr Asn Leu Ala Asp Leu Val Asn Lys Ile Leu Phe Gly Leu Ile
 225 230 235 240

Ile Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 170

<211> 756

<212> DNA

<213> Marine eubacteria

<400> 170

accatgggta aattattact gatattaggt agtgctattg cacttccatc atttgctgct 60

gctgggtggcg atctagatat aagtgatact gttgggtgttt cattctggct ggttacagct 120

ggtagatgttag cgccaactgt gttctttttt gtagaaagag accaagtca gctaaagtgg 180

aaaacttcac ttgctgtatc tggtttaatt actggatag ctttttggaa atatcttat 240

atgagaggtg tttggataga cactggtgat accccaacag tattcagata tattgattgg 300

ttattaactg ttccattaca aatggttgag ttcttatctaa ttcttgctgc ttgtacaagt 360

gttgctgctt cattatcaa gaagcttcta gctggttcat tagtaatgtt aggtgctgga 420

02716.0005.NPUS01.ST25.txt

| | |
|--------------------------------------------------------------------|-----|
| tttgcaggcg aagctggatt agctcctgta ttacctgctt tcattattgg tatggctgga | 480 |
| tggttataca tgatttatga gctatatatg ggtgaaggta aggctgctgt aagtactgca | 540 |
| agtcctgctg ttaactctgc atacaacgca atgatgatga ttattgttgt tgatggca | 600 |
| atttatcctg ctggatatgc tgctggttac ctaatgggtg gcgaagggtgt atacgcttca | 660 |
| aacttaaacc ttatataaa ccttgcac cttgttaaca agattcttatt tggttgatc | 720 |
| atttggaatg ttgctgttaa agaatcttct aatgct | 756 |

<210> 171

<211> 252

<212> PRT

<213> Marine eubacteria

<400> 171

| | | | |
|-----------------------------------------------------------------|----|----|----|
| Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Ala Ile Ala Leu Pro | | | |
| 1 | 5 | 10 | 15 |
| 10 | 15 | | |

| | | | |
|-----------------------------------------------------------------|----|----|--|
| Ser Phe Ala Ala Ala Gly Gly Asp Leu Asp Ile Ser Asp Thr Val Gly | | | |
| 20 | 25 | 30 | |
| 30 | | | |

| | | | |
|-----------------------------------------------------------------|----|----|--|
| Val Ser Phe Trp Leu Val Thr Ala Gly Met Leu Ala Ala Thr Val Phe | | | |
| 35 | 40 | 45 | |
| 45 | | | |

| | | | |
|-----------------------------------------------------------------|----|----|--|
| Phe Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu | | | |
| 50 | 55 | 60 | |
| 60 | | | |

| | | | |
|-----------------------------------------------------------------|----|----|----|
| Ala Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp Asn Tyr Leu Tyr | | | |
| 65 | 70 | 75 | 80 |
| 75 | 80 | | |

| | | | |
|-----------------------------------------------------------------|----|----|--|
| Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Arg | | | |
| 85 | 90 | 95 | |
| 95 | | | |

| | | | |
|-----------------------------------------------------------------|-----|-----|--|
| Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr | | | |
| 100 | 105 | 110 | |
| 110 | | | |

| | | | |
|-----------------------------------------------------------------|-----|-----|--|
| Leu Ile Leu Ala Ala Cys Thr Ser Val Ala Ala Ser Leu Phe Lys Lys | | | |
| 115 | 120 | 125 | |
| 125 | | | |

| | | | |
|-----------------------------------------------------------------|-----|-----|--|
| Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu | | | |
| 130 | 135 | 140 | |
| 140 | | | |

| | | | |
|-----------------------------------------------------------------|-----|-----|-----|
| Ala Gly Leu Ala Pro Val Leu Pro Ala Phe Ile Ile Gly Met Ala Gly | | | |
| 145 | 150 | 155 | 160 |
| 155 | 160 | | |

| | | | |
|-----------------------------------------------------------------|-----|-----|--|
| Trp Leu Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala | | | |
| 165 | 170 | 175 | |
| 175 | | | |

02716.0005.NPUS01.ST25.txt

Val Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met
180 185 190

Met Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala
195 200 205

Gly Tyr Leu Met Gly Gly Glu Gly Val Tyr Ala Ser Asn Leu Asn Leu
210 215 220

Ile Tyr Asn Leu Ala Asp Leu Val Asn Lys Ile Leu Phe Gly Leu Ile
225 230 235 240

Ile Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 172

<211> 756

<212> DNA

<213> Marine eubacteria

<400> 172

accatgggta aattattact gatatttagt agtgcttattc cacttccatc atttgctgct 60
gctgggtggcg atctagatat aagtgtatact gttgggtgttt cattctggct ggttacagct 120
ggtagatgttag cggtcaactgt gttctttttt gttagaaagag accaagtcag cgctaaatgg 180
aaaacttcac ttgcgtgtatc tggtttaatt actggatatac ctttttggaa ttatctctat 240
atgagaggtg tttggataga cactgggtat accccaacag tattcagata tattgattgg 300
ttattaactg ttccattaca aatgggttagt ttcttatctaa ttcttgctgc ttgtacaagt 360
gttgctgctt cattatcaa gaagcttcta gctgggtcat tagtaatgtt aggtgctgga 420
tttgcaggcg aagctggatt agctcctgtt ttacctgctt tcattattgg tatggctgga 480
tggttataca tgatttatga gctatatacg ggtgaaggta aggctgctgt aagtactgca 540
agtcctgctg ttaactctgc atacaacgca atgatgtatc ttattgttgt tggatggca 600
atttatcctg ctggatatgc tgctggttac ctaatgggtg gcgaagggtgt atacgcttca 660
aacttaaacc ttatataaa ccttggccac cttgttaaca agattcttatt tggtttgatc 720
atttggaaatg ttgctgttaa agaatcttct aatgct 756

<210> 173

<211> 252

<212> PRT

<213> Marine eubacteria

<400> 173

Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Ala Ile Ala Leu Pro
1 5 10 15

02716.0005.NPUS01.ST25.txt

Ser Phe Ala Ala Ala Gly Gly Asp Leu Asp Ile Ser Asp Thr Val Gly
20 25 30

Val Ser Phe Trp Leu Val Thr Ala Gly Met Leu Ala Ala Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Ala Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp Gln Tyr Leu Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Arg
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr
100 105 110

Leu Ile Leu Ala Ala Cys Thr Ser Val Ala Ala Ser Leu Phe Lys Lys
115 120 125

Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu
130 135 140

Ala Gly Leu Ala Pro Val Leu Pro Ala Phe Ile Ile Gly Met Ala Gly
145 150 155 160

Trp Leu Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala
165 170 175

Val Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met
180 185 190

Met Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala
195 200 205

Gly Tyr Leu Met Gly Gly Glu Gly Val Tyr Ala Ser Asn Leu Asn Leu
210 215 220

Ile Tyr Asn Leu Ala Asp Leu Val Asn Lys Ile Leu Phe Gly Leu Ile
225 230 235 240

Ile Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

02716.0005.NPUS01.ST25.txt

<211> 756
<212> DNA
<213> Marine eubacteria

<400> 174
accatgggta aattattact gatatttagt agtgctattg cacttccatc atttgctgct 60
gctgggtggcg atctagatat aagtgatact gttgggtgtt cattctggct ggttacagct 120
ggtagatgttag cgccaactgt gttctttttt gtagaaagag accaagtcag cgctaagtgg 180
aaaacttcac ttgcgtgtatc tggtttaatt actggatag cttttggca gtatctctat 240
atgagaggtg tttggataga cactgggtat accccaacag tattcagata tattgattgg 300
ttattaactg ttccattaca aatgggttag ttcttatctaa ttcttgctgc ttgtacaagt 360
gttgcgtgctt cattattaa gaagcttcta gctggttcat tagtaatgtt aggtgctgga 420
tttgcaggcg aagctggatt agctcctgtat ttacctgctt tcattattgg tatggctgga 480
tggttataca tgatttatga gctatatatg ggtgaaggta aggctgctgt aagtactgca 540
agtcctgctg ttaactctgc atacaacgca atgatgatga ttattgttgt tggatggca 600
atttatcccg ctggatatgc tgctggttac ctaatgggtg gcgaagggtgt atacgcttca 660
aacttaaacc ttatataaa cttgccgac cttgttaaca agattcttatt tggtttgatc 720
atttggaatg ttgcgtttaa agaatcttct aatgct 756

<210> 175
<211> 252
<212> PRT
<213> Marine eubacteria

<400> 175

Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Ala Ile Ala Leu Pro
1 5 10 15

Ser Phe Ala Ala Ala Gly Gly Asp Leu Asp Ile Ser Asp Thr Val Gly
20 25 30

Val Ser Phe Trp Leu Val Thr Ala Gly Met Leu Ala Ala Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Ala Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp Glu Tyr Leu Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Arg
85 90 95

02716.0005.NPUS01.ST25.txt

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr
 100 105 110

Leu Ile Leu Ala Ala Cys Thr Ser Val Ala Ala Ser Leu Phe Lys Lys
 115 120 125

Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu
 130 135 140

Ala Gly Leu Ala Pro Val Leu Pro Ala Phe Ile Ile Gly Met Ala Gly
 145 150 155 160

Trp Leu Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala
 165 170 175

Val Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met
 180 185 190

Met Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala
 195 200 205

Gly Tyr Leu Met Gly Gly Glu Gly Val Tyr Ala Ser Asn Leu Asn Leu
 210 215 220

Ile Tyr Asn Leu Ala Asp Leu Val Asn Lys Ile Leu Phe Gly Leu Ile
 225 230 235 240

Ile Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 176
<211> 756
<212> DNA
<213> Marine eubacteria

<400> 176
accatgggta aattattact gatatttagt agtgctattg cacttccatc atttgctgct 60
gctgggtggcg atctagatat aagtgatact gttgggtgtt cattctggct ggttacagct 120
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aaaacttcac ttgctgtatc tggtttaatt actggatag ctttttggaa atatcttat 240
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gttgctgctt cattatcaa gaagcttcta gctggttcat tagtaatggtt aggtgctgga 420
tttgcaggcg aagctggatt agctcctgta ttacctgctt tcattattgg tatggctgga 480
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agtccctgctg ttaactctgc atacaacgca atgatgtatgttggatggca 600
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<210> 177
<211> 252
<212> PRT
<213> Marine eubacteria

<400> 177

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35 40 45

Phe Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Ala Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp Trp Tyr Leu Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Arg
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr
100 105 110

Leu Ile Leu Ala Ala Cys Thr Ser Val Ala Ala Ser Leu Phe Lys Lys
115 120 125

Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu
130 135 140

Ala Gly Leu Ala Pro Val Leu Pro Ala Phe Ile Ile Gly Met Ala Gly
145 150 155 160

Trp Leu Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala
165 170 175

Val Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met
180 185 190

02716.0005.NPUS01.ST25.txt

Met Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala
195 200 205

Gly Tyr Leu Met Gly Gly Glu Gly Val Tyr Ala Ser Asn Leu Asn Leu
210 215 220

Ile Tyr Asn Leu Ala Asp Leu Val Asn Lys Ile Leu Phe Gly Leu Ile
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Ile Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 178
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<212> DNA
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aacttaaacc ttatataaa ccttgcgcac cttgttaaca agattcttatt tggtttgatc 720
atttggaaatg ttgctgttaa agaatcttct aatgct 756

<210> 179
<211> 252
<212> PRT
<213> Marine eubacteria

<400> 179

Thr Met Gly Lys Leu Leu Leu Ile Leu Gly Ser Ala Ile Ala Leu Pro
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Ser Phe Ala Ala Ala Gly Gly Asp Leu Asp Ile Ser Asp Thr Val Gly
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20

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25

30

Val Ser Phe Trp Leu Val Thr Ala Gly Met Leu Ala Ala Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Ala Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Ala
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr
100 105 110

Leu Ile Leu Ala Ala Cys Thr Ser Val Ala Ala Ser Leu Phe Lys Lys
115 120 125

Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu
130 135 140

Ala Gly Leu Ala Pro Val Leu Pro Ala Phe Ile Ile Gly Met Ala Gly
145 150 155 160

Trp Leu Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala
165 170 175

Val Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met
180 185 190

Met Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala
195 200 205

Gly Tyr Leu Met Gly Gly Glu Gly Val Tyr Ala Ser Asn Leu Asn Leu
210 215 220

Ile Tyr Asn Leu Ala Asp Leu Val Asn Lys Ile Leu Phe Gly Leu Ile
225 230 235 240

Ile Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
245 250

<210> 180

<211> 756

<212> DNA

<213> Marine eubacteria

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atttacccctg ctggatatgc tgctggttac ctaatgggtg gcgaagggtgt atacgcttca 660
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atttggaaatg ttgcgtttaa agaatcttct aatgct 756

<210> 181

<211> 252

<212> PRT

<213> Marine eubacteria

<400> 181

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20 25 30

Val Ser Phe Trp Leu Val Thr Ala Gly Met Leu Ala Ala Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Ala Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Glu
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr
100 105 110

02716.0005.NPUS01.ST25.txt

Leu Ile Leu Ala Ala Cys Thr Ser Val Ala Ala Ser Leu Phe Lys Lys
 115 120 125

Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu
 130 135 140

Ala Gly Leu Ala Pro Val Leu Pro Ala Phe Ile Ile Gly Met Ala Gly
 145 150 155 160

Trp Leu Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala
 165 170 175

Val Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met
 180 185 190

Met Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala
 195 200 205

Gly Tyr Leu Met Gly Gly Glu Gly Val Tyr Ala Ser Asn Leu Asn Leu
 210 215 220

Ile Tyr Asn Leu Ala Asp Leu Val Asn Lys Ile Leu Phe Gly Leu Ile
 225 230 235 240

Ile Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 182
 <211> 756
 <212> DNA
 <213> Marine eubacteria

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| gctgggtggcg atctagatat aagtgatact gttgggtttt cattctggct ggttacagct | 120 | |
| ggtatgttag cggcaactgt gttctttttt gtagaaagag accaagtcag cgctaagtgg | 180 | |
| aaaacttcac ttgctgtatc tggtttaatt actggatag cttttggca ttatctctat | 240 | |
| atgagaggtg tttggataga cactgggtat accccaacag tattcgaata tattgattgg | 300 | |
| ttattaactg ttccattaca aatggttgag ttctatctaa ttcttgctgc ttgtacaagt | 360 | |
| gttgctgctt cattattaa gaagcttcta gctggttcat tagtaatgtt aggtgctgga | 420 | |
| tttgcaggcg aagctggatt agctcctgta ttacctgctt tcattattgg tatggctgga | 480 | |
| tggttataca tgatttatga gctatatatg ggtgaaggta aggctgctgt aagtactgca | 540 | |
| agtcctgctg ttaactctgc atacaacgca atgatgatga ttattgttgt tggatggca | 600 | |

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atttggaaatg ttgctgttaa agaatcttct aatgct 756

<210> 183
<211> 252
<212> PRT
<213> Marine eubacteria

<400> 183

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Ser Phe Ala Ala Ala Gly Gly Asp Leu Asp Ile Ser Asp Thr Val Gly
20 25 30

Val Ser Phe Trp Leu Val Thr Ala Gly Met Leu Ala Ala Thr Val Phe
35 40 45

Phe Phe Val Glu Arg Asp Gln Val Ser Ala Lys Trp Lys Thr Ser Leu
50 55 60

Ala Val Ser Gly Leu Ile Thr Gly Ile Ala Phe Trp His Tyr Leu Tyr
65 70 75 80

Met Arg Gly Val Trp Ile Asp Thr Gly Asp Thr Pro Thr Val Phe Gln
85 90 95

Tyr Ile Asp Trp Leu Leu Thr Val Pro Leu Gln Met Val Glu Phe Tyr
100 105 110

Leu Ile Leu Ala Ala Cys Thr Ser Val Ala Ala Ser Leu Phe Lys Lys
115 120 125

Leu Leu Ala Gly Ser Leu Val Met Leu Gly Ala Gly Phe Ala Gly Glu
130 135 140

Ala Gly Leu Ala Pro Val Leu Pro Ala Phe Ile Ile Gly Met Ala Gly
145 150 155 160

Trp Leu Tyr Met Ile Tyr Glu Leu Tyr Met Gly Glu Gly Lys Ala Ala
165 170 175

Val Ser Thr Ala Ser Pro Ala Val Asn Ser Ala Tyr Asn Ala Met Met
180 185 190

Met Ile Ile Val Val Gly Trp Ala Ile Tyr Pro Ala Gly Tyr Ala Ala
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195

200

205

Gly Tyr Leu Met Gly Gly Glu Gly Val Tyr Ala Ser Asn Leu Asn Leu
 210 215 220

Ile Tyr Asn Leu Ala Asp Leu Val Asn Lys Ile Leu Phe Gly Leu Ile
 225 230 235 240

Ile Trp Asn Val Ala Val Lys Glu Ser Ser Asn Ala
 245 250

<210> 184

<211> 756

<212> DNA

<213> Marine eubacteria

<400> 184

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<223> synthetic

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<211> 24

<212> DNA

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| | |
| <210> 187 | |
| <211> 21 | |
| <212> DNA | |
| <213> artificial sequence | |
| <400> 187 | 21 |
| gaggatata ttaatgtatc g | |
| | |
| <210> 188 | |
| <211> 18 | |
| <212> DNA | |
| <213> artificial sequence | |
| <400> 188 | 18 |
| gatttaatct gtatcagg | |
| | |
| <210> 189 | |
| <211> 45 | |
| <212> DNA | |
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| <210> 190 | |
| <211> 45 | |
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| <210> 191 | |
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| | |
| <210> 193 | |
| <211> 45 | |
| <212> DNA | |

02716.0005.NPUS01.ST25.txt

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| <210> 194 | | |
| <211> 44 | | |
| <212> DNA | | |
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| <212> DNA | | |
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| <400> 195 | ttactggat agcttttgg aattatctct atatgagagg tgggg | 45 |
| <210> 196 | | |
| <211> 45 | | |
| <212> DNA | | |
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| <212> DNA | | |
| <213> artificial sequence | | |
| <400> 197 | ttactggat agcttttgg cagtatctct atatgagagg tgggg | 45 |
| <210> 198 | | |
| <211> 45 | | |
| <212> DNA | | |
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| <212> DNA | | |
| <213> artificial sequence | | |
| <400> 199 | ttactggat agcttttgg aaatatctct atatgagagg tgggg | 45 |
| <210> 200 | | |
| <211> 45 | | |
| <212> DNA | | |

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<210> 201
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<400> 201
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<210> 202
<211> 45
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<400> 202
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<210> 203
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<400> 203
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<210> 204
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<400> 204
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<223> synthetic

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<400> 208 45
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